

MIXED METHOD STUDY TO EXAMINE THE MOST EFFECTIVE DELIVERY  
AND DISSEMINATION METHOD FOR THE STRENGTHENING  
FAMILIES PROGRAM (SFP) AMONG ASIAN INDIAN  
AND NON-ASIAN INDIAN FAMILIES  
RESIDING IN UTAH

by

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# **The University of Utah Graduate School**

## **STATEMENT OF DISSERTATION APPROVAL**

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## ABSTRACT

The purpose of this study was to compare the different delivery and dissemination methods for the Strengthening Families Program (SFP) by conducting a mixed method analysis (quantitative and qualitative study) amongst Asian Indian (AI) and non-Asian Indian (NAI) families residing in Utah. The study also examined the impact of the Computer Technology-Based Intervention (CBI) SFP 7-17 Years DVD Program on girls and boys enrolled in the program after the program completion.

The dissertation was mainly divided into two parts. A quantitative section compared the effectiveness of the three different delivery methods of the Strengthening Families Program (SFP). The three delivery methods were compared among each other over the 21 SFP standardized outcomes. The research design consisted of a 2-repeated measure, 3-group quasi-experimental nonequivalent control group design (Chapter 2 and Chapter 4).

Results of the quantitative section suggested that about 70% (15 out of 21) of the outcome effect sizes were larger for the CBI SFP 7-17 Years DVD Program as compared to the SFP norms. Gender analyses revealed that the program was equally effective among girls and boys enrolled in the program (Chapter 4).

The second part of the dissertation is comprised of a qualitative research study. The aim of the qualitative research was to explore the views and perceptions about the newly developed CBI SFP 7-17 Years DVD Program among Asian Indian parents and to

investigate the impact of the SFP DVD Program on the Asian Indian families residing in Utah (Chapter 3). Thematic analyses revealed that Asian Indian parents had improvement in parental involvement in their children's lives, parental monitoring, positive parenting, family cohesion, family communication, family organization, family strengths, and decrease in family conflicts. Parents also reported improvement in children concentration and social behavior and decrease in children depression. The overall alcohol and drug use among the parents showed reduction after the program completion.

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## CHAPTER 1

### INTRODUCTION

### Significance and Background

Substance abuse among the adolescent population in the United States has been one of the top health concerns in public health for a couple of decades. “Substance abuse (SA) is a maladaptive pattern of drug use indicated by continued use despite knowledge of having a persistent or recurrent social, occupational, psychological or physical problem that is caused or exacerbated by the use [or by] recurrent use in situations in which it is physically hazardous” (WHO, 2013).

The term “substance abuse” includes abuse of both illicit and licit drugs. Illicit drugs are those drugs that cannot be cultivated, manufactured, bought, sold, or used within the confines of the law. The most commonly abused illicit drugs are opium, morphine, codeine, heroin and methadone, cocaine, ecstasy, and marijuana (McKenzie, Pinger, & Kotecki, 2012). Licit drugs are the drugs that can be legally purchased and sold in the marketplace, including those drugs that are closely regulated like morphine or lightly regulated like alcohol and tobacco (McKenzie et al., 2012).

### Prevalence of Substance Abuse Among Adolescents in the U.S

According to the 2012 Monitoring the Future (MTF) survey, on average, the lifetime use of illicit drugs among youth in the U.S. was about 55% in 1975, which rose to 66% by the year 1981 that was followed by a drop to 41% until 1992. Between the years 1992 to 1999, the illicit drug use increased significantly to 55%, an increase of 14% in 7 years. As of 2013, the lifetime use of any illicit drug by the youth is about 50%. In addition, the 30-day prevalence rate of all illicit drugs among adolescents stood at 14.6% in 2008; however, over the past 6 years, it has risen to 17.4% (Johnston, O’Malley, Miech, Bachman, & Schulenberg, 2014).

Though overall decline in drugs has been reported recently, problems such as binge drinking, use of bath salts, marijuana, synthetic marijuana, and abuse of over-the-counter (OTC) and prescription drugs, especially narcotics like Vicodin and OxyContin, have been a major concern (Johnston, O'Malley, Bachman, & Schulenberg, 2013; OJJDP, 2010; ONDCP, 2010).

Alcohol still remains one of the most widely used substances among teenagers. In 2012, over half (54%) of 12th graders, and more than one seventh (13%) of 8th graders, reported having been drunk at least once in their life. In the same year, the past 30-day usage of alcoholic beverages among 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders was 11%, 28%, and 42%, respectively. Binge-drinking is defined as having five or more drinks in a row at least once in the past 2 weeks. Binge-drinking prevalence has increased significantly among 12th graders, from 22% to 24%, a rise of 2% within the past 1 year (Johnston et al., 2013).

Trends in marijuana use among adolescents has shown significant rise in the past 2 to 3 years. As of 2012, the average daily use of marijuana was about 1.1%, 3.5%, and 6.5% for 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders, respectively. In other words, “approximately one in every fifteen high school senior students in the U.S. uses marijuana on a regular basis” (Johnston et al., 2013, p. 5). Synthetic marijuana, also known as Spice and K-2, classified as a cannabinoid, is a new herbal drug mixture that usually contains designer chemicals.

Due to its introduction into the market only recently in year 2011, these drugs were not scheduled as illegal by the Drug Enforcement Administration (DEA), leading to their legal and abundant availability for sale on internet sites, shops, gas stations, and other locations. In spite of its regulation by DEA since March 2011, these drugs are still

sold in the market with their current use by approximately 11.3% among 12<sup>th</sup> graders. The reason attributed to the recent spike in the use of marijuana is mainly due to the introduction of synthetic marijuana into the market as well as a decrease in the perceived risk of marijuana use along with an increase in its approval rates (Johnston et al., 2013). The recent legislative amendments in several states such as Colorado and Washington regarding legalization of controlled marijuana sale and use will likely lead to further increases in marijuana use among adolescent and adults.

The rapidly fluctuating drug use trends, continuous introduction of new drugs into the market, easy availability of prescription drugs, changing drug policies, recent changes in marijuana legalization, and the decreasing federal and state prevention funding are predicted to have some serious implications for increased substance abuse, especially among adolescents (Johnston et al., 2013). Effective implementation of cost-effective evidence-based programs (EBPs) with wide dissemination could be a potential solution to combat these fluctuating substance abuse patterns among adolescents.

### Causes of Substance Abuse

There has been abundant research investigating trends and patterns of substance abuse as well as risk factors and protective factors; however, the exact etiological causes of substance abuse still remain unclear. The previous research studies conclude that there is a complex interaction between genetic, biological, and environmental factors leading to substance abuse and misuse (Distel, 2012; Jirtle, 2010; Kendler, Gardner & Dick, 2011; Tarter, 2002).

Several studies have suggested that the younger an individual is at the onset of substance use, the greater is the likelihood that a substance use disorder (SUD) will

develop and continue into adulthood (Hussong et al., 2011; Jones & Waite, 2013; Silveri, 2012). The Substance Abuse and Mental Health Services Administration (SAMHSA) defines substance use disorder (SUD) “as dependence on or abuse of alcohol or illicit drugs” (SAMHSA, 2013, p. 1). Also, youth at the highest genetic risk for drug abuse or those with Type 2 Alcoholism generally begin use before 15 years of age. Statistics show that more than 90% of adults with current substance use disorders (SUD) started using the drugs before the age of 18; half of those began before the age of 15 (Dennis, 2002).

### Epigenetic Research in the Field of Substance Abuse

In the addiction field, sometimes substance abuse is referred to as a “family disease” because children of substance abusers are two to nine times more likely to become drug abusers depending on their level of inherited genetic risk, social circumstances, family environment, and stress (Kumpfer, Fenollar, & Jubani, 2011).

Recently, some of the genes for substance abuse have been identified, such as short alleles of the 5-HTTLPR serotonin transporter gene and the 7-repeat dopamine gene. Epigenetic research (Bernal & Jirtle 2010; Champagne, 2009) with mice has demonstrated that even mice bred for certain genetic diseases can be protected by a nurturing “licking and grooming” mother mouse, leading to the hypothesis that nurturing parenting skills can reduce substance abuse and other inherited “diseases of lifestyle” (Kumpfer, 2013; Kumpfer, Xie, & Magalhaes, 2012)

A randomized controlled trial (RCT) research with African American youth by Brody and associates (Brody et al., 2009 a & b, 2010, 2012) has strengthened the prior epigenetic research hypothesis with mice that nurturing parenting can reduce manifestation of certain genetic diseases. Brody et al. (2009) postulated that participation



in the Strong African American Families Program (SAAF) would ameliorate the link between the 5-HTTLPR polymorphism and risk behavior initiation among adolescent. The 5-HTTLPR polymorphism usually has two variants, a short and a long allele, and the short allele tends to lower the serotonin transporter availability. Youth with one or two copies of the 5HTT short allele are proven to have higher chances of being involved in risky behaviors, including higher alcohol consumption and dependence, as compared to youth having two copies of the long allele.

The participants included 350 families randomly assigned to receive the SAAF intervention and 291 families randomly assigned to the control condition. In order to perform the DNA analysis, a saliva sample was collected from the children above the age of 11 years among the families during the pretest and 4 years later during follow up. These researchers found that genetically at-risk youth at 18 years of age who had participated in an evidence-based family skills training program with their parents, namely the African American version of the Strengthening Families Program 10-14 Years (SAAF) (Kumpfer, Molgaard, & Spoth, 1996) reported 50% lower alcohol and drug use, depression or anxiety, HIV risk, and delinquency. Recently these researchers have also found significant reductions in substance abuse in youth who also tested positive for the 7-repeat dopamine allele (Brody et al., 2013).

### Consequences of Substance Abuse

The consequences of drug abuse can be seen on a personal as well as a community level. Adolescents who persistently indulge in substance abuse often experience an array of problems, including academic difficulties due to low motivation, poor cognitive process, low attention span, mood fluctuations, poor self-control, low self-

esteem, drug seeking behavior, school absences, academic failure, involvement with the juvenile justice system, and other behavioral, social, and health problems (James, Kristjansson, & Sigfusdottir, 2011; Tarter, 2002).

Prolonged substance abuse increases the risk of health problems such as weakened immune system, cardiovascular diseases, stroke, cancers, gastrointestinal diseases, HIV/AIDS, hepatitis, lung diseases, kidney diseases, as well as several mental and behavioral problems (Ouimette & Brown, 2002; Stein, 1999). Moreover, it can also alter the phenotype in the human genome (gene expression) and abnormally modify the brain circuit system, hijacking the pleasure and rewards center in the brain leading to numerous permanent emotional and mental disturbances (Vanyukov & Tarter, 2000). Alcohol affects parts of the brain that control movement, speech, judgment, and memory by depressing the behavioral inhibitory centers, making the person less inhibited while slowing down the nervous system. Substance abuse is often one of the major contributing factors for risky behaviors among adolescents, such as motor vehicle accidents, driving under the influence (DUI), not wearing seatbelts, speeding, risky sexual behaviors, and violent crimes (Maxwell, Freeman, & Davey, 2011).

At the community level, substance abuse burdens the nation due to increased cost in health care, utilization of mental health services, loss of productivity, premature mortalities, and morbidities, drug and alcohol treatment expenses, cost of rehabilitation, hospitalization, and juvenile crime. As of 2008, the total direct and indirect costs of substance abuse were estimated at \$559 billion a year in the United States alone, including the cost of health care, loss of productivity, delinquency, imprisonment, and drug enforcement (NIDA 2008; ONDCP, 2004).

### Family Risk and Protective Factors

Previous research studies in the substance abuse field have been able to successfully establish a list of causal risk and protective factors specific to family environment that are linked to the development of substance use disorders (SUDs) among adolescents. The risk factors involved in early initiation of substance use and long-term misuse include, but are not limited to the following: genetic factors such as a strong family history of substance abuse, presence of risky genes (5-HTTLPR short alleles or 7-repeat dopamine alleles), epigenetic factors such as high stress and cortisol levels related to lack of parental protecting and nurturing (Brody et al., 2012), and environmental factors such as the easy availability of drugs, dysfunctional, and broken families, family modeling of drug using behavior, parental favorable attitudes towards children's drug use, poor parenting practices, low degree of bonding between children and parents, low parental educational aspirations for their children, learning disabilities, and other academic problems, peer pressure to use drugs, and community norms favoring illicit drug use among adolescents (Arthur et al., 2002; Hawkins et al., 1992).

The protective factors such as strong parent child attachment, parental supervision and involvement, parental monitoring, effective communication among family members, positive school engagement, and future expectations are proven to reduce the likelihood of substance abuse among adolescents (Cleveland et al., 2007; Hawkins et al., 2008). Apart from substance abuse, these factors have been confirmed to prevent other negative behavioral problems such as teen pregnancies and sexually transmitted diseases (STDs), delinquency, and poor academic performance (Ary et al., 1999).

The family members, especially parents, are a major influence on children's

attitudes, perceptions, behaviors, and lifestyle choices, including substance abuse. Strong family values, bonding, and communication between family members can build a supportive environment, in turn reducing the developmental vulnerability to tobacco, alcohol, and substance use among children (Cleveland et al., 2007; Kumpfer & Alvarado, 2003; Kumpfer, Alvarado, & Whiteside, 2003).

The structural equation models (SEMs), which are statistically tested etiological models, suggest that family cluster mediators such as family bonding, supervision, and communication of positive family values are the most crucial elements of the protective pathway for preventing adolescent problems and substance use (Kumpfer, Alvarado, & Whiteside, 2003). Similarly, estranged family relations and lower bonding among family members is confirmed to be a strong predictive risk factor for adolescent substance use (DHHS, 2001). Identifying and addressing these risk and protective factors has proven to be one of the most promising strategies in the prevention of substance use problems and delinquency (Arthur et al., 2002; Durlak, 1998; Kellam, Koretz, & Moscicki, 1999).

#### Need for Gender Analyses

Research studies in literature that include gender analyses and gender-specific substance abuse prevention programs are very limited (Kumpfer, Smith, & Summerhays, 2008). The gender differences in substance use rates among adolescents, the differences in their risk and protective factors, and the effectiveness of prevention programs on girls versus boys have not been well-documented (SAMSHA, 2002).

The recent data from National Cross-Site Evaluation of High-Risk Youth Programs conducted by the Center for Substance Abuse Prevention (CSAP) reported that boys and girls participating in the prevention programs may respond differently to

different aspects of prevention approaches (SAMSHA, 2002). Because of higher use and initial prevalence rate of drugs, boys may experience greater and significant reduction in substance use rate as compared to girls by the posttest or 6 months follow-up. However, benefits for girls with lower use rate may surface later as they age and persist over time. While still related to family environment, substance abuse among adolescent boys is more strongly related than in girls to neighborhood social environments and peer pressure, to increase social bonding, enhance their sense of self, for sensation seeking, and boredom release. Girls are more influenced to use drugs and alcohol in order to deal with emotional issues, including relationship problems, body image and eating disorders, anxiety, and depression (Liu & Kaplan, 1996; Kumpfer et al., 2008; SAMSHA, 2002). Positive associations towards family and school are significant protective factors for both boys and girls.

It has also been reported that programs exclusively targeted for females are no more effective in reducing substance use rate for girls than mixed-gender programs. Moreover, the gender-specific programs for females are more likely to stress on effective program content, which is not a strong predictor for effective program results, rather than tailoring it to specific needs of the target audiences (SAMSHA, 2002).

Previous research on the structural equation model (SEM) of etiological factors for substance abuse reported that family protective factors such as parent/ child bonding and parental monitoring, parental attitudes toward substance use, and positive school bonding tend to have a slightly greater impact on girls than on boys, and behavioral self-control and social environment tend to have a greater impact on adolescent boys as pathways to reduce substance misuse (Kumpfer, Alvarado, & Whiteside, 2003; Kumpfer

et al., 2008; Sales, Sambrano, Springer, & Turner, 2003). If this is true, girls should respond well to family-based programs.

While compiling the UNODC (United Nations Office on Drugs and Crime) Guidelines for Effective Drug Prevention Programs for Girls, Kumpfer and Magalhaes (2013) found that only 19 substance abuse prevention programs have ever included subgroup analyses to test their impact on girls separately from boys. Of these, 11 were school-based youth only programs that found no positive results for girls, but of the eight family programs, all but one found positive results for girls and boys. Hence, girls seem to respond better to family-based substance abuse prevention programs. Of the family-based prevention programs, one was specifically designed for girls and it also used computer delivery of program content on the web.

Schinke, Cole, and Fang (2009) conducted a randomized control trial among 202 pairs of adolescent girls and their mothers to evaluate a gender-specific, computer-mediated intervention program in order to prevent underage drinking among early adolescent girls. The subjects participated in an online pretest survey followed by randomization into intervention and control groups. Subjects in the intervention group underwent a computer program aimed to strengthen mother-daughter relationships and to teach girls skills for conflict management, resisting media influences, effective refusing skills for alcohol and drugs, and correcting peer norms about underage drinking, smoking, and drug use. Mothers reported improved communication skills as well as improvement in their perceptions and applications of parental monitoring and rule setting. Adolescent girls showed improvement in their communication skills, conflict management and alcohol use-refusal skills, self-efficacy, and healthier normative beliefs

about underage drinking, and also reported less alcohol use and lower intentions to drink as adults.

Due to the dearth of research studies documenting gender analyses to test the impact of various EBPs on girls and boys, one of the secondary aims of this study is to investigate the impact of CBI SFP 7-17 Years DVD Program on girls and boys enrolled in the program. Moreover, owing to the newness of this program, gender analysis among participants has never been done before.

### Importance of the Family-based Evidence-based Programs in Substance Abuse Prevention

Due to the increased use of illicit drugs among adolescents in the last 6 years, particularly in designer and prescription drugs, more effective, and lower cost evidence-based programs (EBPs) are needed. Besides, there is still a preference to fund substance abuse treatment versus prevention because of the higher numbers of drug addicts in the U.S., especially due to the major increase in drug use among adolescents since the 1990s. Hence, prevention funds have also been redirected to fund substance abuse treatment that is not as effective as prevention and costs much more.

There have been abundant substance abuse prevention interventions with significant positive results; however, the ambiguity concerning what type of intervention is superior for treating substance abuse among adolescents still prevails (Collins, Murphy, & Bierman, 2004). These interventions vary extensively especially within their delivery methods; structure of interventions – if it is a family-based, school-based, group-based, or individual interventions; length of interventions; setting of interventions – school, in patient or outpatient, community, or residential; type of target population; and

if the interventions are voluntary or court-mandated. While there is a variety of approaches to delay or prevent the onset of substance abuse among adolescents, research suggests evidence-based family strengthening and skills training programs seem to provide most positive and consistent outcomes (Hogue et al., 2005; Kumpfer, Alvarado, & Whiteside, 2003; Kumpfer, Xie, & Magalhães, 2012, Ramirez et al., 2012; Rowland et al., 2008; Spas et al., 2012).

### Use of Computer Technology-Based Intervention (CBI) for Program

#### Delivery and Dissemination of EBP

Participant recruitment and engagement is considered the most challenging part of the research process (Simpson et al., 2000) or, for that matter, in any population intervention. Several studies in the healthcare field have documented difficulties concerning recruitment of population in prevention as well as treatment programs (Hawranik & Pangman, 2002; Miller, McKeever, & Coyte, 2003; Simpson et al., 2000).

Recent research studies have revealed that successful retention of the participants is the single best predictor of the effectiveness of the program (Simpson, 2001), and higher level of engagement is directly proportional to the greater retention rate (Broome, Joe, & Simpson, 2001). Low recruitment and engagement could lead to premature study termination, decreased statistical power and negative findings, increased probability of type 2 error, and inadequate generalizability, leading to decreasing participant and researcher confidence, and impediment to documentations, publications, and policy implementation (Muth et al., 2001, Wilcox et al., 2001).

Haggerty et al. (2006, 2007) conducted a controlled clinical trial to compare the efficacy of parent and adolescent group-administered (PAG) and self-administered (SA)



formats of the Parents Who Care Program, a universal substance abuse prevention program for families of young adolescents, with a no-treatment control group. The SA format families completed a 117-minute video divided into 18 sections and a workbook within a 10-week time frame at their homes, whereas the PAG attended seven weekly group meetings of 2 to 2 ½ hours in length held in schools. The results reported higher program initiation in African American families for the self-administered format. Further analysis reported that the chances of initiating sex or substance use were reduced by almost 70% for African American teens in the SA condition and 75% for the African American teens in the PAG compared to controls. The results are favorable to the increased effectiveness of self-paced, home-use computer programs for ethnic as well as the higher risk families where parents have to work more and cannot attend group interventions as easily.

Another computer-based intervention called Parenting Wisely (PW) used a brief self-administer parent training CD-ROM program that taught strategies such as contracting, contingency management, specific commands, I statements, active listening, assertive discipline, praise, and role modeling behavior to the parents. In a randomized study, Kacir and Gordon (1999) investigated the effect of PW CD-ROM on parenting practices. Thirty-eight mothers were assigned to either PW program or a no-treatment control group. Mothers enrolled in the PW CD-ROM program showed increased knowledge of adaptive parenting practices, and children reported significantly lower rates of behavior problems as compared to the wait list control group.

The Computer Technology-Based Home-Use SFP 7-17 Years DVD Program, will enable the families to watch, review, and practice the sessions at their own pace, and at

their own convenience, which in turn will increase the retention and engagement rate among the participants. The CBI SFP 7-17 Years DVD Program can serve to be a research-grounded and cost-effective program with wide dissemination capabilities across a variety of the population.

### Overview of the Strengthening Families Program (SFP)

The Strengthening Families Program (SFP) is an evidence-based family skills training program found to significantly reduce problem behaviors, delinquency, and alcohol and substance abuse among families, and improve social competencies and school performance among children.

### Etiological Theory and Mechanisms of Effectiveness

The SFP has been proven to improve most crucial risk and protective factors for substance use guided by its underlying etiological theory, the Social Ecology Model of Adolescent Substance Abuse (SEM) (Kumpfer, Alvarado, & Whiteside, 2003; Sales et al., 2003). This SEM-tested causal model found that the family cluster variables of parent child attachment or bonding, positive parenting skills and supervision, and communication of positive family values were the most critical factors in protecting youth from substance abuse as well as delinquency, teen pregnancy, and school failure. Additional underlying models included the Values/ Attitudes/ Stressors/ Coping skills, and Resources (VASC) model (Kumpfer & DeMarsh, 1985) and the Resiliency Model (Richardson et al., 1990). Other important etiological factors were youth behavioral control and school performance, and to a lesser extent the community environment, but these statistically significant pathways were not as significant as family factors, particularly for girls (Kumpfer, Smith, & Summerhays, 2008).

Similar tested SEM models with longitudinal predictive data examined the four possible outcomes, namely drug abuse, school failure, teen pregnancy, and delinquency, and found the three family protective factors, namely family bonding, monitoring, and family norms, to be the most important factors in preventing behavioral and psychological health problems (Ary, Duncan, Duncan, & Hops, 1999).

#### History of the Strengthening Families Program (SFP)

The original 14-session Strengthening Families 6-11 Years Program (SFP) was developed in 1982 on a National Institute on Drug Abuse (NIDA) research grant as the first parenting program for high-risk addicted families with children ages 6 to 11 years (Kumpfer et al., 2010). At least 12 randomized control trials, with most conducted by independent research teams, and several field studies have found the SFP 6-11 Years Program to be effective in reducing risks and actual substance abuse in general population, and also at-risk youth (Kumpfer & Alvarado, 2003; Kumpfer et al., 2010; Petrie, Bunn, & Byrne, 2007). It is a research-based parenting and family skills and training program designed to increase resilience, and reduce risk factors for behavioral, emotional, academic, and social problems. SFP builds on protective factors by improving family relationships, parenting skills, and improving the youth's social and life skills, thus helping parents and children to develop happier family relationships, and prevent substance abuse (Kumpfer, Alvarado & Whiteside, 2003; UNODC, 2009). Once proven effective on the NIDA federal grant, it was culturally adapted on separate 5-year federal grants for African American families, Asian/Pacific Islanders, Hispanic and American Indian families, rural families, and families with preteens (Kumpfer et al., 2010).

During the early 1990s, Dr. Karol Kumpfer and Dr. Virginia Molgaard, Co-Principle investigators (PIs) at Iowa State University, developed a shorter 7-session SFP 10-14 Years version for the low-risk families with pre- and early teens. The Oxford University Cochrane Collaboration Reviews in Medicine and Public Health have found the SFP 10-14 Years version to be twice as effective in reducing alcohol and drug use, as any other family or youth-only prevention program delivered in schools (Foxcroft et al., 2003; 2012).

Although SFP was originally developed as a selective prevention strategy for 6-11-year-old children of substance abusing parents in treatment, it has been widely used with non-substance-abusing parents and youth. It not only involves parents and children in separate classes in the first hour, but also the entire family in the second hour of each of the 14-weekly sessions.

In multiple replications with many ethnic groups in universal, selective, and indicated population and diverse settings (e.g. schools, churches, family centers, and recreation centers), this program has been found effective in reducing risk factors, and increasing protective and resilience factors among the participants. The most immediate results seen among the participating families are significant improvements in family cohesion, communication, organization, resilience, and reduced family conflicts as a result of improved parenting style. These positive outcomes result over time in improving children's prosocial behaviors, mental status, and grades along with decline in aggression, and violent behaviors (Kumpfer, Alvarado, & Whiteside, 2003). Longitudinal follow-ups find reductions in alcohol, tobacco, and other drugs after up to 5 (Kumpfer et

al., 2003; Kumpfer, Whiteside, Greene, & Cofrin, 2010) and 15 years in universal populations (Spoth, Redmond, Trudeau, & Shin, 2002).

In the 2000s, Dr. Kumpfer and Dr. Whiteside designed new SFP 14-session versions for high-risk families with both the younger children (SFP 3-5 Years) version and early teens (SFP 12-16 Years) version. These versions have been effectively replicated in multiple agencies in the U.S. and Europe with better results than the research RCT studies (Kumpfer, Greene, Whiteside, & Cofrin, 2010; Kumpfer, Xie, & O'Driscoll, 2012).

In the year 2011, Drs. Kumpfer and Whiteside partnered with MADD Utah (Mothers Against Drunk Driving) to develop a universal prevention program as a new 11-session Home-Use DVD version (SFP 8-16 Years) based on the same research-proven content and principles used in the previous versions. This version has been pilot tested in schools with excellent results that are equivalent to the prior tested SFP versions (Kumpfer & Brown, 2011). In 2013, MADD-Utah changed the name of this version from SFP 8-16 Years to SFP 7-17 Years Program.

#### Different Delivery Methods of SFP

The purpose of this research was to compare the effectiveness of the two new digital DVD video versions, namely the new Home-Use 11-session CBI SFP 7-17 Years DVD version and the DVD enhanced family group version of the Strengthening Families Program (SFP) to SFP norms. The SFP norms were derived from the database of over 5,000 families who had completed the proven 14-session SFP 6-11 Years or SFP 12-16 Years group Program. The structure and components of the three SFP delivery methods are as follows.

### Structure of Traditional Research-Proven 14-Session SFP Group Version

The 14-session SFP 6-11 and SFP 12-16 Years Programs have been implemented at various settings such as schools, drug treatment centers, family and youth service agencies, child protection and foster care agencies, community mental health centers, homeless shelters, churches, and drug courts and prisons.

The traditional SFP curriculum includes three 14-week courses: Parent Training, Children's Skills Training, and Family Life Skills Training. The program starts with a family meal that includes informal family practice time and group leader coaching.

Following a meal together, parents and children are sent to their respective 1-hour parent training or children's skills training groups. Each parent and children group is headed by two group leaders. Parents learn nurturing skills in order to promote positive behaviors in children by using positive reinforcement and constructive criticism, rewards, clear communication, effective discipline, substance use education, problem solving, and boundary setting. Children learn effective communication, understanding feelings, social skills, problem solving, resisting peer pressure, consequences of substance use, and compliance with parental rules.

During the second hour, families engage in structured family activities, practice therapeutic child play, conduct family meetings, learn communication skills, practice effective discipline, reinforce positive behaviors in each other, and plan family activities together (Kumpfer et al., 2003; Kumpfer, Molgaard, & Spoth, 1996). The participating families receive home practice assignments and tracking sheets to continue practicing the skills they learned in class and to track their progress. After completion of all 14 sessions, data from participants are collected using a standardized SFP retrospective pre- and

posttest questionnaire. The program also consists of a booster session usually conducted at 6 and 12 months after the program completion.

In order to retain the participants, SFP has been using special incentives for attendance, positive behaviors, homework completion, and graduation. Its effectiveness is attributed to the fact that the whole family attends each week.

#### Structure and Contents of the CBI SFP 7-17 Years DVD Program

Since the past few decades, the use of computer technology to obtain health-related information; manage and prevent diseases; or to deliver behavioral change interventions by changing knowledge, attitudes, and behaviors has been a norm (Budman, 2000; Moore, 2011). According to Noar, Black, and Pierce (2009), “computer technology-based interventions (CBIs) can be defined as those interventions that use computer technology as the primary or sole medium for intervention delivery” (p. 525). In spite of the promising results, the computer technology-based interventions (CBI) are yet to attain their full potential due to their underutilization and dearth in research studies.

Though the SFP 10-14 Years Program has been proven to be effective in reducing problem behaviors, delinquency, and alcohol and drug abuse in children, the cost-benefit studies (Miller & Hendrie, 2008) do not rate SFP to be as cost-beneficial at \$11 saved per dollar spent as compared to youth-only school substance abuse prevention programs with \$20 to \$33 cost/benefit ratios. This is because SFP costs much more, ranging from about \$880 for the 7-session version to \$1400 per family for the 14-session version for higher risk families because of the high cost of personnel, with five staff required for implementation fidelity. With fewer funds available for prevention today, more cost-efficient methods of delivering the SFP content to families was needed.

Over the last 5 years, MADD-Utah partnered with Dr. Kumpfer to develop a new 11-session CBI SFP 7-17 Years DVD Program. The 11-lesson video format is being produced as a self-paced DVD. The new DVD is based on new brain science and resilience research. The original 14-session SFP Program was edited to 10 sessions plus one Introduction session video. The first group class on “Getting to know you and learning classroom rules” and the last session on “Graduation and what have we learned” was removed and the initial two separate lessons on “Positive discipline and consequences” were combined into one lesson in this DVD. Detailed supporting handouts, which can be downloaded and printed from the DVD, were added to augment each lesson’s video content. Fidelity of the SFP content was meticulously maintained, with each parent and youth skill demonstrating by ethnically diverse family actors in a variety of ways. In the DVD, the viewing families are invited to pause the DVD and role-play each skill during the classroom sessions, and a “Role-play now” reminder sign flashes on a black screen. Role-play slips featuring different scenarios have been provided with each lesson’s handouts.

To augment the DVD, new DVD scripts, a guidebook, weekly lesson summary posters, behavior tracking sheets, and homework assignments have been created. The content of the 11-session SFP 7-17 Years DVD sessions are shown in Table 1.1. The new Computer Technology-Based Home-Use Strengthening Families 7-17 Years DVDs series contains 10 30-minutes segments, plus one 15-minute introductory segment. Currently, the DVD is available only in English language, but if more funds are available, the DVD will soon will be translated in Spanish and Chinese languages.



Table 1.1: SFP 7-17 Years DVD Program – Contents of Sessions

Session	Family		Parent		Youth	
	Topic	Details	Topic	Details	Topic	Details
<b>Intro</b>	Healthy family-healthy brain	Ages 10-21 critical brain development	Parents key to prevention	One-on- one daily play time with child	Each is of value, dreams possible	Teen choices affect brain development
<b>1</b>	Notice & praise the good daily	Praise increases good behavior	How to praise effectively	Stress-reducers & fun family dinners	Noticing the good feels good	Compliment good in family members
<b>2</b>	Communication & family meetings	Active listening & I messages skills	Validate kids feelings	Banish negative communication	Be assertive vs. aggressive	Talking politely gets you more in life
<b>3</b>	5 “R’s” increase family success	Rules, rewards, responsibilities, routines, rituals	Rules routines add stability, reward jar	Use social, other reinforcers; one word reminders	Benefits of “5 R’s” responsibilities increase skills	Routines simplify life; happy rituals increase bonding
<b>4</b>	Set limits & consequences	Extra chore jar consequences	Teach pro-social skills	Punishments not effective as praise	Learn “following instructions” skill	Learn to accept “no” graciously
<b>5</b>	Problem solving/ negotiation skills	5 easy steps to problem solving	Problem solving steps	Win- Win negotiation	Problem solve to avoid trouble	Negotiating chores & rewards
<b>6</b>	Anger & stress management	Identify stress & anger triggers	Deal effectively with anger	Re-program anger responses	I can stay cool in conflict	“Step out of anger” game helps brain
<b>7</b>	Goals/ contracts -change behavior	Goal setting & tracking behavior	Changing behavior skills	Teach to receive positive criticism	Goals & dreams important	Set SMART goals to achieve dreams

Table 1.1continued

	<b>Family</b>		<b>Parent</b>		<b>Youth</b>	
<b>Session</b>	Topic	Details	Topic	Details	Topic	Details
<b>8</b>	Alcohol & drugs damage brain	Brain facts animation	Proven skills to keep kids safe	Bonding, boundaries, monitoring	Steps to avoid peer pressure	“5 C’s” to say “No” and keep friends
<b>9</b>	Choosing good friends/ monitoring	Peers influence drinking behavior	Monitor kids activities	Keep alcohol-free social environment	Choose and be a positive friend	Friendship skills/ accept monitoring
<b>10</b>	Family values, traditions, service	Teach & reinforce values, traditions	Good brain health service	teach kids to give back to society	Prosocial behavior = happy	I can be an agent of change

The DVD trains parents in updated SFP research-proven parenting and communication skills, demonstrates ways to set clear rules and use positive reinforcement to train children in prosocial behaviors, and refusal skills so they can stay alcohol and drug free. It encourages family bonding activities such as regularly eating dinner together and scheduling daily one-on-one play time with each child. Common problems parents experience in dealing with teens (and teens with parents) are presented and successfully dealt with using the new skills.

One component of the DVD features a segment showing how the brain develops during adolescence; how teens can actually direct the development of their own brain by what they choose to think, say, or do; and how alcohol and drugs hijack the pleasure-reward system of the developing brain causing addiction, and limiting a normal pleasure response. It also mentions the importance of good nutrition, and exercise for a healthy brain, which could help in obesity prevention.

The multicultural DVD is intended for parents and children from different ethnicities to watch together. To increase engagement (recruitment and completion), the actors represent all major ethnic groups. The adult and youth hosts, and trained family therapy coaches, are from several different ethnicities (Pacific Islander, African American, and White). The three different actor families (African American, Hispanic, and White) are shown attending class, learning skills, and interacting with each other, and their “Family Coach.” These coaches intervene in arguments and coach families in their new skills.

The DVD format is developed so that each skill builds on the previous skill and prepares families for the next. The skills are both recognizable and replicable. The DVD

package contains a small colored curriculum guidebook that outlines the skills being taught in each of the 10 lessons, lists family goals for the lesson, and indicates which handouts will be needed. As the DVD is a dual DVD/CD, handouts can be readily printed by accessing the DVD through a computer. In this way, the curriculum content is delivered in a standardized way across all youth and parents.

Though SFP is one of the EBPs, the new Computer Technology-Based Home-Use SFP 7-17 Years DVD version has never been evaluated. If even the DVD is at least 20% as effective as the group version, the cost at \$5 for an individual DVD per family would make SFP the most cost-beneficial program. However, research is needed to demonstrate whether the Computer Technology-Based Home-Use DVD is as effective as the traditional 14-session group SFP versions. The research is needed because one cannot just assume that since the new computerized version of SFP is based on the evidence-based SFP that is still effective, especially since it has new content on the recent brain research and also it is a shorter 10-session version.

#### Structure of DVD Enhanced Family Group Version of SFP

In order to know the effectiveness of the CBI SFP as compared to the traditional in-class 14-session SFP Program, the 11-session CBI SFP curriculum was implemented at schools in Utah in a group setting.

The primary aim here was to implement the lessons from the CBI SFP version in a group format similar to the traditional 14-session SFP version. In this version, the intervention followed the traditional group format where the program starts with a family meal followed by separate parent and children sessions. The families meet together during the family session to review the lessons, and engage in structured family activities,

practice therapeutic child play, conduct family meetings, learn communication skills, practice effective discipline, reinforce positive behaviors in each other, and plan family activities together (Kumpfer et al., 2003; Kumpfer, Molgaard, & Spoth, 1996). The participating families also receive home practice assignments, and tracking sheets from the DVD to continue practicing the skills they learned in class, and to track their progress.

Each participating family receives a copy of the SFP 7-17 Years DVD Program to take home at the beginning of the program so that they can review the skills at their own convenience, and time even after conclusion of the intervention. The families participate in the same standardized SFP retrospective questionnaire used for the traditional SFP group intervention at the end of the program.

#### Including Asian Indian Population in the Study

The United States has been experiencing a major racial, ethnic, and age-related demographic shift since the last couple of decades, and will continue this transformation in the near-term. As of the current 2013 statistics, minority individuals now comprising about one-third (37%) of the U.S. population are predicted to become the majority by year 2060 with the country estimated to be 57% minority population (CDC, 2013a; U.S. Census Bureau, 2012). According to the Pew Research Center (2011) report, the Hispanic population, the largest minority group, is estimated to constitute 29% of the U.S. population by 2050 with 15% increase since 2005, whereas the non-Hispanic White population that constitutes about 67% of the population as of now will further decline to become a minority (47%) by 2050.

Among the other ethnicities, Asians were the fastest-growing race or ethnic group

entering U.S. through international immigration between years 2000-2010 (U.S. Census Bureau, 2013). The percentage of the Asian population increased more than four times faster than percentage increase of the total U.S. population, by 43% from 10.2 million to 14.7 million (U.S. census, 2011). Overall, the Chinese, Asian Indian, and Filipino population constitute approximately 60% of the total Asian population residing in the U.S. The Chinese, the largest Asian minority community, accounts for 4 million of the total U.S population, followed by Filipinos (3.4 million, Asian Indians (3.2 million), Vietnamese (1.9 million), Koreans (1.7 million), and Japanese (1.3 million) (CDC, 2013b). By year 2050, it is predicted that the Asians will comprise approximately 9.2% of the total U.S population (40.6 million Asians) as compared to only 4.8% (14.7 million Asians) as of 2010 (CDC, 2013b). In the next 50 years, the new immigrants and their growing families will account for 82% of the total population increase in the U.S. (Pew Research Center, 2011).

As a result of this demographic transition, racial and ethnic minorities will need increased attention from health educators, policy makers, and the government in order to identify and prevent their health problems. Moreover, this demographic transition will bring about certain changes in alcohol, and other drug use patterns among Asian communities residing in the United States.

Despite the recent increase in the Asian Indian population in the U.S, this group has been paid relatively little attention resulting in a dearth of research related to culture, traditions, and alcohol and substance abuse patterns. As the Asian Indians are now the second largest Asian minority group growing in the U.S, it is crucial to take this minority group into consideration for health promotion and preventive research.

Particularly, in regard to substance abuse, there has been a misconception that the substance use prevalence among Asian/Pacific Islanders is much less as compared to the non-Asian populations (NIDA, 1998). However, some research studies suggest that this may be due to lack of drug-related research studies and the underrepresentation of the Asian populations in studies of alcohol and drug use (Bhattacharya, 2002; NIDA, 1998; Thai, Connell, & Tebes, 2010). Also, this perception of lower abuse rates is possible because this population is less likely to use treatment services because they are not culturally appropriate or tailored to the needs of this population. Kuramoto (1994) reported that the alcohol use rates of this subset of populations in their countries of origin is much higher than the alcohol use rate among Whites in the U.S.

However, adjusting to the host culture and the acculturation process put the adolescents from the immigrant families at a risk of substance use and abuse (Chung, Flook, & Fuligni, 2009; Farver, Bhadha, & Narang, 2002). Specifically, differential generational acculturation where the immigrant Asian youth acculturate more rapidly to the Western culture and language than their parents and grandparents can lead to family conflict, and increased delinquency and drug use. This result was found in a structural equation modeling study to determine precursors of substance abuse among Thai youth who were in detention centers (Rodnium, 2007).

Moreover, the majority of the universal prevention programs are developed for the general American culture, focusing mostly on White, middle-class values, which might not be culturally appropriate or tailored to the specific needs of ethnic families. The traditional ethnic families favor family systems change approach as compared to individual change approach for prevention because of their cultural values that stress

interconnection, reciprocity, and filial responsibility as contrasted with the Western value of individual achievement (Alvarado, Smith, & Bellamy, 2002; Boyd-Franklin, 2001).

Previous meta-analyses have confirmed that family-based interventions have effect sizes two to nine times larger than youth-only interventions, on average, in decreasing youth conduct problem behaviors for both traditional as well as acculturated minority families (Kumpfer et al., 2002; Tobler & Kumpfer, 2000), so this family intervention should be more effective for Asian Indian families.

According to the study done by Ortega, Rosenbeck, Alegria, and Desai (2000), the distress and trauma of immigration, and hardships associated with the acculturation and assimilation process are associated with the development of emotional and behavioral problems among youths, including substance abuse. The study was conducted using the National Comorbidity Survey (NCS), a national probability sample of 8098 first generation U.S. adults aged 15 to 54 years. It can be inferred for this study that there might be a growing prevalence of psychiatric and substance use disorders among immigrant population yet to surface due to the rising levels of acculturation in the next few decades.

Some of the previous research studies suggested that when family-based intervention programs are offered in schools and communities, it is very difficult to recruit and retain ethnic families, mainly because most programs are not culturally appropriate (Biglan & Metzler, 1999). The participation from ethnic families is as low as 10% in these programs (Kumpfer et al., 2002).

Thus, the Computer Technology-Based Home-Use DVD version of SFP could be used to increase recruitment and retention of the ethnic families in substance abuse



prevention programs. Some of the minority cultures, particularly Asians and American Indians, hold a substantial amount of reverence towards the elderly people and their wisdom. Their experience and suggestions are often taken into consideration or as a family obligation rather than reflective techniques that stress on individuality and independence. It is one of the reasons why behavioral family-based approaches are more effective with ethnic families (McMahon, 1999; Nix, Bierman, & McMahon, 2009).

Bhattacharya (2002) examined about 200 acculturating Asian Indian adolescents for their drug abuse risk and found that although the prevalence of drug use among Asian Indians was much lower as compared to the American youths, the cultural difference, generation gap, disparate socio-cultural norms, and acculturation process could lead to stressful family conflicts, generating certain vulnerabilities to drug use and abuse among these adolescents. The adolescents who reported having tried tobacco, alcohol, marijuana, or other drugs in this study were influenced heavily by their peer groups. They either had peers with lower academic performance, peers with past history of drug use, and peers of whom their parents were less likely to disapprove of substance use, whereas adolescents who placed importance on their parents' drug abuse prevention messages were more likely to not use drugs.

#### Purpose of the Research Study

The aim of the study was to compare the different delivery and dissemination methods of the Strengthening Families Program (SFP) by conducting a mixed method analysis (quantitative and qualitative study) among Asian Indian and non-Asian Indian families residing in Utah. In addition, the study also examined the impact of the completion of the CBI SFP 7-17 Years DVD Program on girls and boys enrolled in the

program.

### Research Questions and Hypotheses

The following are the research questions and hypothesis for the study.

#### Research Question 1

Is the newly developed 11-session Computer Technology-Based Home-Use DVD and the DVD enhanced family group versions (DVD + group) of the Strengthening Families Program (SFP) 7-17 Years is as effective as the traditional 14-session SFP group norms? (Quantitative analysis).

#### Hypothesis 1.1

There would be statistically significant group mean pre- to posttest differences for all three delivery methods of SFP for all but two (e.g., child hyperactivity and criminality) of the 21 standardized outcomes (19 out of 21 outcomes).

The two nonstatistically significant outcomes are not age appropriate to this middle school age cohort and also have been found to have low reliability.

#### Hypothesis 1.2

The DVD enhanced family group will have statistically significant results with the largest pre- to posttest differences for all 21 standardized outcomes followed by the SFP norms.

#### Hypothesis 1.3

The CBI DVD group will have statistically significant results with the smallest pre- to posttest differences.

### Research Question 2

(Gender outcomes) How will the newly developed CBI SFP 7-17 Years DVD Program affect the girls and boys enrolled in the program? (Quantitative analysis).

#### Hypothesis 2

The group mean pre- to posttest differences for girls graduating from the CBI SFP 7-17 Years Program will be statistically significantly larger as compared to the group mean pre- to posttest differences for the boys enrolled in the program.

### Research Question 3

What are the views, thoughts, and perceptions about the newly developed Computer Technology-Based Home-Use SFP 7-17 Years DVD Program among Asian Indian (AI) parents living in the U.S. by conducting in-depth interviews? (Qualitative analysis - Thematic analysis).

As this is a qualitative analysis, there is no predetermined hypothesis for this section of the study.

### Research Question 4

Do the Asian Indian (AI) families benefit as much from the CBI SFP 7-17 Years DVD Program on the 21 standardized SFP outcomes as compared to the non-Asian Indian (NAI) families?

#### Hypothesis 4

The group mean pre- to posttest differences for Asian Indian families participating in the CBI SFP 7-17 Years Program will be statistically significantly larger as compared to the group mean pre- to posttest differences among the non-Asian Indian

families on the 21 standardized SFP outcomes.

### Limitations of the Study

#### Internal Validity

In the field of research, usually the term “validity” is used to find out whether the given research measures or finds out what it is supposed to measure and to estimate the extent of truthfulness of the results (Golafshani, 2003).

Internal validity refers to the extent to which the experiment was conducted accurately, referring to its research design, selection of participants, selection of measuring instruments, what variables were measured, and to what extent the research is confident that the changes in the dependent variable/ variables were caused solely due to the independent variable/ variables and not by any extraneous/ controlling or mediator variables. It is nothing but the degree to which results of the study can be manipulated (Campbell & Stanley, 1967; Shadish, Cook, & Campbell, 2002).

As the research design used in this study is a quasi-experimental, nonequivalent comparison group design instead of an experimental randomized control design, some of the potential threats to internal and external validity cannot be ruled out such as regression to the mean. By including a recall proxy retest design where the participants complete a retrospective pretest at posttest, even more threats to internal validity were controlled, such as testing and instrumentation effects. Although there are a few limitations to this type of design such as participants self-reporting the changes that occurred in them during the pre- and posttest, it is still one of the most effective methods used to assess participants self-reported changes in knowledge, awareness, skills, confidence, attitudes, and behaviors (Lamb, 2005; Pratt et al., 2000).

In this research design, as the pre- and posttest took place at a single point in time, it was less time-consuming and more convenient for the participants to fill in the answers as compared to the standard pre/posttest design. Also, participants are less likely to drop out of the research because they are not asked to answer very personal questions before the program even starts. In addition to this, all the information was collected from the participants at one time; this design also controlled few threats to internal validity, such as attrition, mortality, and testing bias.

Sometimes, retrospective pre/posttest research design is used in order to collect longitudinal retrospective pretest data for program evaluation when the program had no regular pretest. According to Campbell and Stanley (1967), the internal validity threats that a quasi-experimental recollection proxy pretest design controls include history, maturation, testing, instrumentation, mortality or attrition, and selection. Though it is a relatively robust design, some of the threats to internal validity that cannot be controlled are regression to the mean and interactions with selection factors. These selection-related explanations may include selection by history, selection by maturation, selection by regression, selection by attrition, selection by testing, and selection by instrumentation (Shadish, Cook, & Campbell, 2002).

The potential threats to the internal validity and methods that will be used to limit their impact on the outcomes are as follows:

- 1) Maturation (controlled threat to internal validity)

It is sometimes natural for the participants to change over time; these maturational changes exclusively due to the progression of time, and not treatment, may explain any changes in participants during the experiment (Fraenkel, Wallen, & Hyun, 1993).

For instance, the more time participants spent in a study, there are chances that he/she might become older, tired, more or less motivated, disinterested or involved in the study. The participants might perform better or worse on the dependent variable not as a result of the independent variable, but because of these external factors. As all of the participants were given the 10 to 14 weeks intervention, maturation over this period should be similar for all participants. Moreover, the intervention was conducted for a relatively short period of time (10-14 weeks) so the maturation, if any, would be minimal.

## 2) Subject Attrition (controlled threat to internal validity)

When participants are lost or they drop out from the study, the group uniformity formed at the beginning of the study may be altered; thus, differences between intervention and control groups at the end of the study may be due to differences in those who remained in each group rather than due to the effects of treatment (Shadish et al., 2002). As it is a retrospective pre/posttest, only the participants that remained until the end of the program were considered for testing.

## 3) Testing Effects (controlled threat to internal validity)

Taking a test usually affects succeeding testing results; thus, participants' performance on a measuring instrument at the posttest or follow-up may be influenced by the initial testing. These changes in the participants' scores may not be due to treatment, but because of the participants' familiarity with the testing instrument (Merriam, 1995). Sometimes, participants may remember the correct answers or may be conditioned to know that they are being tested, resulting in bias. To control this threat to validity, recollection proxy pretest design was used.

As the pre- and posttest occurs at a single point in time after the intervention, it

not only consumes less time than the standard pre- and posttest, but also reduces participant's testing burden, issues with mortality, and attrition of the sample size. In addition, it is a convenient method to match the pre- and posttest results for a valid data analysis to increase the accuracy of the reporting. As the participants rate themselves at a single point in time, changes in self-reported knowledge and behavior may be more accurately represented by retrospective pretest designs than by the traditional pre/posttest design (Pratt, McGuigan, & Katzev, 2000). The disadvantages are memory and positive response bias.

#### 4) Memory Recall (partially controlled threat to internal validity)

The main drawback of the recall proxy pretest design is that it is based on memory or estimates to the scale items at the beginning of the intervention, against which the current situation is compared (Pratt et al., 2000). As the SFP intervention period is relatively smaller, ranging from 10 to 14 weeks, it is unlikely that the memory recall will be an issue; however, with the 6-month follow-up surveys, chances of memory recall cannot be ruled out.

#### 5) Instrumentation (partially controlled threat to internal validity)

Instruments used to measure participants' performance may change over time; thus, changes in participants' performance may not be due to treatment but to faulty equipment, recording devices, or systemic or human errors (McKinnon, 1988; Shadish et al., 2002).

As it was a retrospective pre/posttest and the same measuring instrument was used for all the groups, instrumentation effect is minimal in this study. However, the testing method was not uniform throughout the study. Some participants preferred a pen and

paper format method while others preferred online survey instrument. Though the testing instrument was the same, the testing methods were different across the study.

#### 6) History (uncontrolled threat to internal validity)

History refers to any unplanned, unanticipated external events beyond the scope of research that occurs between the pretest and the posttest. These events can sometimes affect the participant's responses to the treatment or the intervention. Outside events (beyond the context of the study such as natural calamities, earthquake, Tsunami, war, and violence, political turmoil, economic recession), and different time frames of program implementation can influence the participants, resulting in changes in their knowledge, attitude, or behavior, but this threat is relevant in any type of repeated measures design (Shadish et al., 2002). However, it is a major threat to long-term interventions such as 6 months, 1 year, or longer follow-ups.

As this is only a 10-14 week intervention, there are minimal chances that some other outside events may affect the dependent variables in this study. In addition, the enhanced DVD group and the CBI DVD group were subjected to the same major history effects since the time of the interventions were identical, and in the same city. Though minimal, the threats to internal validity due to history cannot be ruled out completely.

#### 7) Regression to the Mean (uncontrolled threat to internal validity)

Regression to the mean usually occurs when repeated tests are conducted. Sometimes participants perform very well or very poorly in a particular test producing extreme scores or outliers just by chance (Campbell & Stanley, 1967). But those chance factors might not be present during the second test. Their scores might not be as extreme as the previous tests, but the scores on the subsequent test might regress towards the



mean. The changes in the participant's performance may be due to regression effects, and not due to the intervention. For instance, if children with problem behaviors such as stealing, aggression, or substance abuse are selected to participate in SFP, sometimes improvements at the end of the intervention may be the results of regression towards the mean and not the effectiveness of the program. This population might be high risk, but not in-crisis families.

In this study, the families are not in crisis so regression to the mean, while not totally controlled for, should be minimal. Having a true randomized control group is the best way to determine the extent of regression in the study samples. During data analysis, assessment of the standard deviations of each measured outcome can help determine if there are more extreme families in one group vs. another. When subjects are selected for attributes, regression threat will be carried into the research by default. Since this is a relatively applied study, the participants' attributes like ethnicity, education background, risk levels, and socio-economic status can be considered as the elements that could contribute to strengthen the generalizability of this program.

#### 8) Selection (uncontrolled threat to internal validity)

As this was a quasi-experimental research design, random assignment or selection of the participants was not feasible. Participation in the study was voluntary. Self-selected participants are usually different from the typical members of the target population. For instance, usually parents who want to improve their parenting skills are more likely to enroll in the program, and are more likely to show positive results after the intervention. The positive change does not necessary imply that the program was effective as these parents were better than the typical parents from the beginning itself.

There might be some preexisting conditions among the participants that could be the plausible explanations for changes in the outcomes, and not necessarily the treatment itself such as gender, socioeconomic status, educational status, and preexisting medical condition. These preexisting conditions might confound the results. However, this could be true to any research design, including experimental randomized control trials.

### External Validity

External Validity on the other hand, refers the extent to which the study results can be generalized to populations other than the sample used or applied to other people and settings (Campbell & Stanley, 1967; Shadish et al., 2002). For example, the results of a particular study conducted at a specific setting, with certain types of people (specific age group, gender, ethnicity, race, geographical location, and socio-economic status) and, at a specific time cannot be generalized to other contexts such as other geographical locations, people, and time. The best method to control most threats to external validity is by conducting randomized controlled trials among the participants who are representative of the population.

As this is a quasi-experimental research design, with selection factors, it is difficult to predict the degree of external validity threats. However, this study used a retrospective pre- and posttest data collection method with comparison to the SFP norms as suggested by Campbell and Stanley (1967) in order to increase the validity of self-report questionnaires as compared to the nonexperimental single program pre- to posttest only research designs (Kumpfer, Xie, & O'Driscoll, 2012). In this case, the ideal way to control most threats to external validity will be to replicate the study in different settings, among different populations, at different times, and by multiple researchers. One of the

major advantages of using the SFP database for comparison in this study is that the traditional SFP 12-16 normative sample was collected from several different agencies, locations, time frames, and types of families-except all being high-risk, and settings.

The potential threats to the external validity and methods that will be used to limit their impact on the outcomes are as follows:

1) Effect of Testing (controlled for threat to external validity)

It refers to the fact that the administration of a test, in this case, a pretest may indirectly affect the responses or performance of the participants in a research study (Isaac & Michael, 1971; Onwuegbuzie & McLean, 2003). Thus, the results may not be generalizable to situations where pretesting will not occur. In order to minimize this effect, research designs not including pretests can be the best fit. This study uses a recollection proxy pretest design. This design is similar to the standard pre/posttest design, but here the “pretest” measure is collected at the end of the study in a “Then” and “Now” testing format. This data collection method minimizes the repeated measure testing effect, and also response bias drift. For instance, it is not uncommon for parents to rate themselves as good parents. However, monitoring their parenting techniques during SFP intervention might change their outlook and learn what good parenting actually is.

2) Selection Treatment Interaction (controlled for threats to external validity)

An interaction between the selection of participants and the intervention (e.g., the independent variable) can sometime bias the results (Campbell et al., 1963; Cook & Campbell, 1979). As the subjects were not randomly selected from the population, their characteristics, such as prior experiences, learning, ethnicity, race, socioeconomic status, and personality factors, might interact with the intervention effects and bias their

performance. The study results may not be applicable to the other population or settings (Shadish et al., 2002).

In this study, a careful quasi-experimental design was used, but the groups were matched according to the socioeconomic status and demographics, in order to generalize the results to other population and settings.

### 3) Effects of Experimental Arrangement (uncontrolled for threats to external validity)

Sometimes, when the participants are aware that they are being observed or tested, they react differently to the situations. This is known as the Hawthorne effect. The performance of participants might not be because of the intervention alone, but also because of their reaction to the external observation (Shadish, Cook, & Campbell, 2002). For example, SFP families participating in the traditional group version may react differently to the intervention as they are being observed by the group leaders and other participants, whereas families participating in the Home-Use SFP DVD Program may react differently as compared to the SFP group intervention because they practice the lessons in natural settings and without them being observed.

### 4) Small Sample Size (uncontrolled for threats to external validity)

The total sample size of the study was approximately 1700 participants. However, they were distributed in three different groups (treatment methods) with an unequal number of participants in each group. The traditional SFP norm database included approximately 1450 participants, DVD enhanced family group (DVD + group) version included 74 participants, and CBI SFP DVD 7-17 Years version consisted of 81 participants. With such a small sample size in the DVD enhanced family group version

and CBI SFP DVD version, they are unlikely to be the representative of the population. A larger sample size with randomization of the participants would have been a better approach.

#### 5) Experimenter's Effect (uncontrolled for threats to external validity)

This refers to the possibility that a researcher may sometimes unintentionally influence the performance of participants in a study (Shadish et al., 2002). In this research study, the researcher was mainly responsible for data collection at multiple sites, thus there are minimal chances of the researcher influencing the participants performance.

### Structure of the Dissertation Chapters

This dissertation follows the five-chapter format. A brief outline of the chapters is as follows:

Chapter 1 includes an overview and introduction to the purpose of the research, specific aims, research questions, and hypothesis of the study. It also contains the literature review on the use of computer technology in the delivery and dissemination of evidence-based programs, and the literature review on prior research of substance abuse among the Asian Indian population residing in the U.S. In addition to this, Chapter 1 includes the research design of the study, potential threats to internal and external validity of the study design, and methods used to control these threats.

Chapter 2 reports the findings of the pilot testing conducted using the SFP 7-17 Years DVD Program in the Salt Lake City schools. The aim of this chapter is to discuss the effectiveness of the Universal Home-Use and Group DVD of the new Strengthening Families Program 7 to 17 Years as compared to SFP Group Norms.

Chapter 3 reports the findings from the mixed method approach, focusing mostly on the in-depth interviews and quantitative analysis amongst the Asian Indian (AI) and non-Asian Indian (NAI) families residing in Utah. The aim of this qualitative research is to explore the views, thoughts, and perceptions about the newly developed Computer Technology-Based DVD version of the SFP 7-17 Years Program among Asian Indian parents living in Utah.

Chapter 4 reports the findings of the quantitative analysis of the study that focused mostly on a 3 x 2 quasi-experimental research design (pretest and posttest) to compare the effectiveness of the Computer Technology-Based Home-Use SFP 7-17 Years DVD to the DVD enhanced group version (DVD + group), and the traditional SFP norms. The statistical analysis includes 3 x 2 repeated measures ANOVA along with post hoc analysis and calculating the Cohen's *d* effect sizes for the three conditions on 21 standardized substance use risk or protective outcomes including 30-day ATOD use. A 2 X 2 repeated measures ANOVA will be conducted to compare the mean scores of the two groups to measure the impact of the CBI SFP 7-17 Years DVD Program on the Asian Indian (AI) and non-Asian Indian families. In order to conduct gender analyses, 2 x 2 within between groups ANOVA will be done by comparing the SFP 7-17 Years DVD outcomes among the girls and boys enrolled in the program.

Chapter 5 provides the summary of the research findings of the study and also discusses directions for future research.

### References

- Arthur, M. W., Hawkins, J. D., Pollard, J. A., Catalano, R. F., & Baglioni, A. J. (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors. The communities that care youth survey. *Evaluation Review*, 26, 575-601. doi: 10.1177/0193841X0202600601.
- Ary, D. V., Duncan, T. E., Biglan, A., Metzler, C. W., Noell, J. W., & Smolkowski, K. (1999). Development of adolescent problem behavior. *Journal of Abnormal Child Psychology*, 25, 141-150.1
- Ary, D.V., Duncan, T.E., Duncan, S.C., & Hops, H. (1999). Adolescent problem behavior: The influence of parents and peers. *Behavior Research and Therapy*, 37, 217-230.
- Bernal, A. J., & Jirtle, R. L. (2010), Epigenomic disruption: The effects of early developmental exposures. *Birth Defects Research Part A: Clinical and Molecular Teratology*, 88, 938-944. doi: 10.1002/bdra.20685.
- Bhattacharya, G. (2002). Drug abuse risks for acculturating immigrant adolescents: Case study of Asian Indians in the United States. *Health & Social Work*, 27(3), 175-183.
- Biglan, A., & Metzler, C. (1999). A public health perspective for research on family-focused interventions. In R. Ashery, E. Robertson, & K. Kumpfer (Eds.), *Drug abuse prevention through family interventions* (National Institute of Drug Abuse Research Monograph on family-focused prevention research, pp. 430-457). Rockville, MD: National Institute on Drug Abuse.
- Boyd-Franklin, N. (2001). Reaching out to larger systems. In interventions with multicultural families (Part 2). *The Family Psychologist*, 17(3), 1-4.
- Brody, G. H., Beach, S. R. H., Philibert, R. A., Chen, Y. F., Lei, M. K., Murry, V. M., & Brown, A.C. (2009a). Parenting moderates a genetic vulnerability factor in longitudinal increases in youths' substance use. *Journal of Consulting and Clinical Psychology*, 77(1), 1-11.
- Brody, G. H., Beach, S. R. H., Philibert, R. A., Chen, Y. F., & Murry, V. M. (2009b). Prevention effects moderate the association of 5-HTTLPR and youth risk behavior initiation: Gene  $\times$  environment hypotheses tested via a randomized prevention design. *Child Development*, 80(3), 645-661.
- Brody, G. H., Chen, Y. F., Beach, S. R., Kogan, S. M., Yu, T., Diclemente, R. J., Wingood, G. M., Windle, M., & Philibert, R. A. (2013). Differential sensitivity to prevention programming: A dopaminergic polymorphism enhanced prevention

- effect on protective parenting and adolescent substance use. *Health Psychology*. [Epub ahead of print]
- Brody, G. H., Chen, Y. F., Kogan, S. M., Murry, V. M., & Brown, A. C. (2010). Long-term effects of the Strong African American Families program on youths' alcohol use. *Journal of Consulting and Clinical Psychology*, 78(2), 281-285.
- Brody, G. H., Chen, Y. F., Kogan, S. M., Yu, T., Molgaard, V. K., DiClemente, R. J., & Wingood, G. M. (2012). Family centered program to prevent substance use, conduct problems, and depressive symptoms in black adolescents. *Pediatrics*, 129(1), 108-115.
- Broome, K. M., Joe, G. W., & Simpson, D. D. (2001). Engagement models for adolescents in DATOS-A. *Journal of Adolescent Research*, 16(6), 608-623.
- Budman, S. H. (2000). Behavioral health care dot-com and beyond: Computer mediated communications in mental health and substance abuse treatment. *American Psychologist*, 55, 1290-1300.
- Campbell, D. T., & Stanley, J. C. (1967). *Experimental and quasi-experimental designs for research*. Chicago: RandMcNally.
- Centers for Disease Control and Prevention. (2013a). *Asian American populations*. Retrieved from <http://www.cdc.gov/minorityhealth/populations/REMP/asian.html>
- Centers for Disease Control and Prevention. (2013b). *Racial & ethnic minority populations*. Retrieved from <http://www.cdc.gov/minorityhealth/populations/rempe.html>
- Champagne, F.A., (2009). Epigenetic influence of social experiences across the lifespan. *Developmental Psychobiology*, 1-13.
- Chung, G. H., Flook, L., & Fuligni, A. J. (2009). Daily family conflict and emotional distress among adolescents from Latin American, Asian, and European backgrounds. *Developmental Psychology*, 45(5), 1406-1415.
- Cleveland, M. J., Feinberg, M. E., Bontempo, D. E., Greenberg, M. T. (2007). The role of risk and protective factors in substance use across adolescence. *Journal of Adolescent Health*, 43 (2), 157-164.
- Collins, L. M., Murphy, S. A., & Bierman, K. L. (2004). A conceptual framework for adaptive preventive interventions. *Prevention Science*, 5(3), 185-196.
- Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis issues for field settings*. Boston, MA: Houghton Mifflin Company.



- Dennis, M. L. (2002). Treatment research on adolescent's drug and alcohol abuse: Despite progress, many challenges remain. *Connection*. Washington, DC: Academy for Health Services Research and Health Policy. Retrieved from [www.academyhealth.org/publications/connection/index.htm](http://www.academyhealth.org/publications/connection/index.htm)
- Department of Health and Human Services. (2001). *America's children: Key national indicators of well-being*. Annual Report prepared by federal interagency forum on child and family statistics. Retrieved from <http://www.childstats.gov/>
- Distel, M. A., Trull, T. J., de Moor, M. M., Vink, J. M., Geels, L. M., van Beek, J. H., ... & Boomsma, D. I. (2012). Borderline personality traits and substance use: Genetic factors underlie the association with smoking and ever use of cannabis, but not with high alcohol consumption. *Journal of personality disorders*, 26(6), 867-879.
- Durlak, J. A. 1998. Common risk and protective factors in successful prevention programs. *American Journal of Orthopsychiatry*, 68 (4), 512-520.
- Farver, J. A. M., Bhadha, B. R., & Narang, S. K. (2002). Acculturation and psychological functioning in Asian Indian adolescents. *Social Development*, 11(1), 11-29.
- Foxcroft, D. R., Ireland, D., Lister-Sharp, D.J., Lowe, G., & Breen, R. (2003). Longer-term primary prevention for alcohol misuse in young people: A systematic review. *Addiction*, 98, 397-411.
- Foxcroft, D. R., & Tsertsvadze, A. (2012). Universal alcohol misuse prevention programs for children and adolescents: Cochrane systematic. *Perspectives in Public Health*, 132(3), 128-134. doi: 10.1177/1757913912443487.
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (1993). *How to design and evaluate research in education*. (2<sup>nd</sup> Ed.) New York: McGraw-Hill.
- Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, 8(4), 597-607.
- Haggerty, K. P., MacKenzie, E.P., Skinner, M. L., Harachi, T. W., & Richard, F. & Catalano, R. F. (2006). Participation in "Parents Who Care": Predicting program initiation and exposure in two different program formats. *The Journal of Primary Prevention*, 27(1), 47-65. doi: 10.1007/s10935-005-0019-3.
- Haggerty, K. P., Skinner, M. L., MacKenzie, E. P., & Catalano, R. F. (2007). A randomized trial of Parents Who Care: Effects on key outcomes at 24 month follow up. *Prevention Science*, 8(4), 249-260.

- Hawkins, J. D., Brown, E. C., Oesterle, S., Arthur, M. W., Abbott, R. D., & Catalano, R. F. (2008). Early effects of communities that care on targeted risks and initiation of delinquent behavior and substance use. *Journal of Adolescent Health, 4*(2), 15-22.
- Hawkins, J., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin, 112*(1), 64-105. doi:10.1037/0033-2909.112.1.64.
- Hawranik, P. & Pangman, V. (2002) Recruitment of community dwelling older adults for nursing research: A challenging process. *Canadian Journal of Nursing Research 33*(4), 171-184.
- Hogue, A., Liddle, H. A., Singer, A., & Leckrone, J. (2005). Intervention fidelity in family based prevention counseling for adolescent problem behaviors. *Journal of Community Psychology, 33*(2), 191-211.
- Isaac, S., & Michael, W. B. (1971). *Handbook in research and evaluation*. San Diego: Edits.
- James, J. E., Kristjansson, A. L., & Sigfusdottir, I. D. (2011). Adolescent substance use, sleep, and academic achievement: evidence of harm due to caffeine. *Journal of adolescence, 34*(4), 665-673.
- Jirtle, R. (2010, June). *Epigenetic mechanisms on gene expression*. Annual conference of the society for prevention research. Paper presented at the SPR 18th annual meeting cells to society: Prevention at all levels.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2012). *Monitoring the future national results on adolescent drug use: Overview of key findings, 2011*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2013). *Monitoring the future national results on drug use: 2012 overview, key findings on adolescent drug use*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.
- Johnston, L. D., O'Malley, P. M., Miech, R. A., Bachman, J. G., & Schulenberg, J. E. (2014). *Monitoring the future national results on drug use: 1975-2013: Overview, key findings on adolescent drug use*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.
- Jones, S. N., & Waite, R. L. (2013). Underage drinking: An evolutionary concept analysis. *Nursing Clinics of North America, 48*(3), 401-413.

- Hussong, A. M., Jones, D. J., Stein, G. L., Baucom, D. H., & Boeding, S. (2011). An internalizing pathway to alcohol use and disorder. *Psychology of Addictive Behaviors*, 25(3), 390-404.
- Kacir, C., & Gordon, D. (1999). Parenting adolescents wisely: The effectiveness of an interactive videodisk parent training program in Appalachia. *Child and Family Behavior Therapy*, 21(4), 1-22.
- Kellam, S. G., Koretz, D., & Moscicki, E. K. (1999). Core elements of developmental epidemiologically based prevention research. *American Journal of Community Psychology*, 27(4), 463-482.
- Kendler, K. S., Gardner, C., & Dick, D. M. (2011). Predicting alcohol consumption in adolescence from alcohol-specific and general externalizing genetic risk factors, key environmental exposures and their interaction. *Psychological medicine*, 41(7), 1507-1516.
- Kumpfer, K. L. (2013). Family based interventions for the prevention of substance abuse and other impulse control disorders in girls. Invited Spotlight Article, *ISRN Addiction*, Hindawi Publishing.
- Kumpfer, K. L., & Alvarado, R. (2003). Family-strengthening approaches for the prevention of youth problem behaviors. Principles of effective prevention programs. *American Psychologist*, 58 (6/7), 457–465. [PMID: 12971192].
- Kumpfer, K. L., Alvarado, R., Smith, P., & Bellamy, N. (2002). Cultural sensitivity and adaptation in family-based prevention interventions. *Prevention Science*, 3(3), 241-246. doi 10.1023/A:1019902902119.
- Kumpfer, K. L., Alvarado, R., & Whiteside, H. O. (2003). Family based interventions for the substance abuse prevention. *Substance Use and Misuse*, 38(11-13), 1759-1789.
- Kumpfer, K. L., & Brown, J. (2011). *New Way to Reach Parents: A SFP DVD*. Western states substance abuse annual ATOD conference, Boise, Idaho.
- Kumpfer, K. L., & DeMarsh, J. (1985). Genetic and family environmental influences on children of drug abusers. *Journal of Child in Contemporary Society* 3(4), 117-161.
- Kumpfer, K. L., Fenollar, J., & Jubani, C. (2011). An effective family skills-based intervention for the prevention of health problems in children of alcohol and drug-abusing parents. *Pedagogía social. Revista interuniversitaria*, (21), 85-108.

- Kumpfer, K. L., & Magalhães, C. (2013). *Gender Guidelines for Substance Abuse Prevention Program in Girls: Do Prevention Programs Work for Girls*. UNODC, Vienna.
- Kumpfer, K. L., Molgaard, V., & Spoth, R. (1996). The Strengthening Families Program for prevention of delinquency and drug use in special populations. In R. DeV Peters, & R. J. McMahon, (Eds.) *Childhood Disorders, Substance Abuse, and Delinquency: Prevention and Early Intervention Approaches*. Newbury Park, CA: Sage Publications.
- Kumpfer, K.L., Smith, P., & Summerhays, J. F. (2008). A wake-up call to the prevention field: Are prevention programs for substance use effective for girls? *Substance Use and Misuse*, 43(8), 978-1001.
- Kumpfer, K. L., Whiteside, H. O., Greene, J. A., & Cofrin, K. A. (2010). Effectiveness outcomes of four age versions of the Strengthening Families Program in statewide field sites. *Group Dynamics: Theory, Research, and Practice*, 14(3), 211-229.
- Kumpfer, K.L., Xie, J. & Magalhães, C. (2012). Cultural adaptations of evidence-based family interventions to strengthen families and improve children's outcomes. *European Journal of Developmental Psychology*, 9(1), 104-116. Psychology Press ISBN: 978-1-84872-761-8.
- Kumpfer, K. L., Xie, J. & O'Driscoll, R. (2012). Effectiveness of a culturally adapted Strengthening Families Program 12-16 Years for high risk Irish families. *Child and Youth Care Forum*, 41(2), 173-195.
- Kuramoto, F. H. (1994). Drug abuse prevention research concerns in Asian and Pacific Islander populations. *NIDA research monograph*, 139, 249-272.
- Lamb, T. (2005). *The Retrospective Pretest: An Imperfect but Useful Tool*. Retrieved from the Evaluation Exchange: <http://www.hfrp.org/evaluation/the-evaluationexchange/issue-archive/evaluation-methodology/the-retrospective-pretest-an-imperfect-but-useful-tool>
- Liu, X. & Kaplan, H. (1996). Gender-related differences in circumstances surrounding initiation and escalation of alcohol and other substance use/abuse. *Deviant Behavior: Interdisciplinary Journal*, 17, 71-106.
- Maxwell, J. C., Freeman, J. E., & Davey, J. D. (2011). Characteristics of impaired drivers who enter substance abuse treatment. *Traffic Psychology: An International Perspective*, 37-52.

- McKenzie, J. F., Pinger, R. R., & Kotecki, J. E. (2012). *An introduction to community health*. (7<sup>th</sup> Ed.). Sudbury, MA: Jones & Bartlett learning, LLC.
- McKinnon, J. (1988). Reliability and validity in field research: Some strategies and tactics. *Accounting, Auditing & Accountability Journal*, 1(1), 34-54.
- McMahon, R. J. (1999). Parent training. In S. W. Russ & T. H. Ollendick (Eds.), *Handbook of psychotherapies with children and families* (pp. 153-180). New York: Kluwer Academic/Plenum Press.
- Merriam, S. (1995). What can you tell from an n of 1?: Issues of validity and reliability in qualitative research. *PAACE Journal of Lifelong Learning*, 4, 50-60.
- Miller, T. & Hendrie, D. (2008). *Substance abuse prevention dollars and cents: A cost-benefit analysis*, DHHS Pub. No. (SMA) 07-4298. Rockville, MD: Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration.
- Miller, K. L., McKeever, P., & Coyte, P. C. (2003). Recruitment issues in healthcare research: The situation in home care. *Health and Social Care in the Community*, 11(2), 111-123.
- Moore, B. A., Fazzino, T., Garnet, B., Cutter, C. J., & Barry, D. T. (2011). Computer based interventions for drug use disorders: A systematic review. *Journal of Substance Abuse and Treatment*, 40(3), 215-223. doi:10.1016/j.jsat.2010.11.002.
- Muth, K., Yu, E., Alston, B. & Ellenberg, J. H. (2001) The closeout process for a clinical trial terminated early for lagging enrollment and inadequate follow-up. *Controlled Clinical Trials*, 22, 49-55.
- National Institute on Drug Abuse. (1998). *Drug use among racial/ethnic minorities*. NIH Publication No. 98-3888. Retrieved from <http://www.ssc.wisc.edu/~oliver/RACIAL/Reports/NIHMinoritydrugUse%20report.pdf>
- National Institute on Drug Abuse. (2008). *Addiction science: From molecules to managed care*. Retrieved from <http://www.drugabuse.gov/publications/addiction-science-molecules-to-managed-care/introduction/drug-abuse-costs-united-states-economy-hundreds-billions-dollars-in-increased-health>
- Nix, R. L., Bierman, K. L., & McMahon, R. J. (2009). How attendance and quality of participation affect treatment response to parent management training. *Journal of Consulting and Clinical Psychology*, 77(3), 429-438. doi: 10.1037/a0015028.

- Noar, S. M., Pierce, L., & Black, H. (2009). Can computer mediated interventions change theoretical mediators of safer sex? A meta-analysis. *Human Communication Research*, 36, 261-297. doi: 10.1111/j.1468-2958.2010.01376.x.
- Office of Juvenile Justice and Delinquency Prevention. (2010). Youth drinking rates and problems: A comparison of European countries and the United States. Washington, D.C. U.S. Government Printing Office. Retrieved from [http://resources.prev.org/underageddrinking\\_resources.html](http://resources.prev.org/underageddrinking_resources.html).
- Office of National Drug Control Policy. (2004). The economic costs of drug abuse in the United States, 1992-2002. Washington, DC: Executive Office of the President [Publication No. 207303].
- ONDCP. (2010). Newsletter of the Office of National Drug Control Policy. ONDCP Update, 1(1), 3.
- Onwuegbuzie, A. J., & McLean, J. E. (2003). Expanding the framework of internal and external validity in quantitative research. *Research in the Schools*, 10(1), 71-90.
- Ortega, A., Rosenbeck, R., Alegria, M., & Desai, R. (2000). Acculturation and the lifetime risk of psychiatric and substance use disorders among Hispanics. *Journal of Nervous Mental Disorders*, 188(11), 728-735.
- Ouimette, P., & Brown, P. J. (2002). *Trauma and substance abuse: Causes, consequences, and treatment of comorbid disorders* (1<sup>st</sup> Ed.). Washington, DC: American Psychological Association Press.
- Pratt, C. C., McGuigan, W. M., & Katzev, A. R. (2000). Measuring program outcomes: Using retrospective pretest methodology. *American Journal of Evaluation*, 21, 341-349.
- Petrie, J., Bunn, F., & Byrne, G. (2007). Parenting programmes for preventing tobacco, alcohol or drugs misuse in children < 18: A systematic review. *Health education research*, 22(2), 177-191.
- Pew Research Center. (2011). *U.S. Population projections: 2005–2050*. Retrieved from <http://www.pewhispanic.org/files/reports/85.pdf>
- Ramirez, R., Hinman, A., Sterling, S., Weisner, C., Campbell, C. (2012). Peer influences on adolescent alcohol and other drug use outcomes. *Journal of Nursing Scholarship*, 44(1), 36-44.
- Richardson, G. E., Neiger, B. L., Jensen, S & Kumpfer, K. L. (1990). The resiliency model. *Journal of Health Education*, 21(6), 33-39.
- Rodnium, J. (2007). *Causes of delinquency: The social ecology model for Thai youth*. (Doctoral dissertation). University of Utah, Salt Lake City, Utah.

- Rowland, M. D., Chapman, J. E., & Henggeler, S. W. (2008). Sibling outcomes from a randomized trial of evidence based treatments with substance abusing juvenile offenders. *Journal of Children and Adolescent Substance Abuse*, 17(3), 11-26.
- Sale, E., Sambrano, S., Springer, J. F., & Turner, C. W. (2003). Risk, protection, and substance use in adolescents: A multi-site model. *Journal of Drug Education* 33(1), 91-105.
- Schinke, S. P., Cole, K. C. A., & Fang, L. (2009). Gender-specific intervention to reduce underage drinking among early adolescent girls: A test of a computer-mediated, mother-daughter program. *Journal of Studies on Alcohol and Drugs*, 70(1), 70-77.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Houghton Mifflin Company.
- Silveri, M. M. (2012). Adolescent brain development and underage drinking in the United States: Identifying risks of alcohol use in college populations. *Harvard review of psychiatry*, 20(4), 189-200.
- Simpson, N. K., Johnson, C. C., Ogden, S. L., Gamito, E., Trocky, N., McGuire C., . . . Sullivan, D. (2000). Recruitment strategies in the prostate, lung, colorectal and ovarian (PLCO) cancer screening trial: The first six years. *Control Clinical Trials*, 21(6), 356S-378S.
- Simpson, D. D. (2001). Modeling treatment process and outcomes. *Addiction*, 96, 207-211.
- Spas, J., Ramsey, S., Paiva, L. A., & Stein, L.A. (2012). All might have won, but not all have the prize: Optimal treatment for substance abuse among adolescents with conduct problems. *Substance Abuse: Research and Treatment*, 6, 141-155. doi: 10.4137/SART.S10389.
- Spoth, R. L., Redmond, C., Trudeau, L., & Shin, C. (2002). Longitudinal substance initiation outcomes for a universal preventive intervention combining family and school programs. *Psychology of Addictive Behaviors*, 16(2), 129-134.
- Stein, M. D. (1999). Medical consequences of substance abuse. *Psychiatric Clinics of North America*, 22(2), 351-370.
- Substance Abuse and Mental Health Services Administration (2002). *The national cross-site evaluation of high-risk youth programs*. Center for Substance Abuse Prevention, DHHS Publication No. (SMA) 00-3375. Rockville, MD.

- Tarter, R. E., (2002). Etiology of adolescent substance abuse: A developmental perspective. *The American Journal on Addictions*, 11, 171-191.
- Thai, N. D., Connell, C. M., & Tebes, J., K. (2010). Substance use among Asian American adolescents: Influence of race, ethnicity, and acculturation in the context of key risk and protective factors. *Asian American Journal of Psychology*, (1)4, 261-274.
- Tobler, N., & Kumpfer, K. L. (2000). *Meta-analysis of effectiveness of family-focused substance abuse prevention programs*. Report submitted to the Center for Substance Abuse Prevention, Rockville, MD.
- Thyer, B. A. (2012). *Quasi-experimental research designs (Pocket guides to social work research methods)*. New York, NY: Oxford University Press.
- United States Census Bureau. (2011). *Overview of race and Hispanic origin: 2010*. 2010 Census Briefs, C2010BR-02. Washington, DC: U.S. Government printing office. Retrieved from <http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf>
- United Nations Office on Drugs and Crime. (2009). *Guide to implementing family skills training programs for drug prevention*. United Nations. New York: New York.
- Vanyukov, M. & Tarter, R. (2000). Genetic studies of substance abuse. *Drug and Alcohol Dependence*, 101-123.
- Who Health Organization. (2013). *Management of substance abuse*. Retrieved from [http://www.who.int/substance\\_abuse/terminology/abuse/en/](http://www.who.int/substance_abuse/terminology/abuse/en/)
- Wilcox, S., Shumaker, S. A., Bowen, D. J., Naughton, M. J., Rosal, M. C., Ludlam, S. E., Dugan, E., Hunt, J. R., & Stevens S. (2001) Promoting adherence and retention to clinical trials in special populations: A women's health initiative workshop. [Workshop proceedings.] *Controlled Clinical Trials*, 22, 279-289.



## CHAPTER 2

PILOT TEST OF THE EFFECTIVENESS OF THE HOME-USE AND GROUP DVD  
OF THE NEW 11-SESSION STRENGTHENING FAMILIES PROGRAM 7 TO 17  
YEARS COMPARED TO 14-SESSION SFP GROUP NORMS

### Abstract

After 12 years of reductions, adolescent substance abuse, particularly binge drinking, marijuana, and prescription drugs, has increased in the past 6 years in the U.S. According to comparative effectiveness reviews, including the Cochrane Reviews and CSAP's cost-benefit analysis, the most successful EBP to prevent youth substance use is the Strengthening Families Program (SFP). The group classes, which parents and youth attend together, teach research-based parenting, family, and youth social skills. SFP is cost-effective (\$11 saved/dollar spent), yet costly to administer—\$800 to \$1400 per family for a 7 or 14 weekly session course.

The research compared the new 11-session DVD and its group version with the traditional 14-session SFP norms using a quasi-experimental 3 group nonequivalent comparison group design that included two repeated measures. Ninety-one families were recruited voluntarily from schools to participate in one of the two SFP DVD conditions. Twenty-one outcomes were measured using the standardized SFP retrospective pre- and posttest questionnaire. The data were analyzed using 3 x 2 repeated measures ANOVA along with post hoc analyses to compare the three different delivery methods of the SFP.

The DVD outcomes revealed statistically significant outcomes for all but 3 of 21 outcomes and almost as large Cohen's *d* effect sizes for the parenting (*d* = .48 vs. .65), and family outcomes (*d* = .69 vs. .70) as the 14 session SFP groups, but better youth results (*d* = .54 vs. .48).

The pilot study of the new 11-session SFP DVD suggests the computer-delivered and much less costly DVD is almost as effective as the existing 14-session SFP. A more cost-beneficial, computer-delivered video version of SFP has the potential to create a

dramatic breakthrough in low-cost or no-cost dissemination of EBPs to create major public health impact in reducing teen ATOD use and associated mental, physical, and social costs.

## Introduction

### Problem Statement

Substance use among the adolescent population in the United States has been one of the top priorities in the health and prevention field for a couple of decades. According to the Monitoring the Future (MTF) survey 2011, on an average, the lifetime use of illicit drug among 8<sup>th</sup> graders, 10<sup>th</sup> graders, and 12<sup>th</sup> graders was about 55% in 1975, which rose to 66% in year 1981 followed by a decline in 1992 and 1999. All illicit drug use further plummeted to 47% in 2007 until 2009; however, there has been a recent increase in the use of illicit drug use for the last 6 years, which currently stands at 49% (Johnston, O'Malley, Bachman, & Schulenberg, 2012).

The rates of annual illicit drug use among adolescent, while peaking in 1999 at 42.1%, decreased to 35.9% by 2007; however, it has been increasing in the past 4 years to 40% (Johnston, O'Malley, Bachman, & Schulenberg, 2013). In 2011, 50% of high school seniors reported having tried an illicit drug at some time, 40% used one or more drugs in the past 12 months, and 25% used one or more drugs in the prior 30 days (Johnston, O'Malley, Bachman, & Schulenberg, 2011). The number of adolescents using illicit drug continued growing in 2011 and impacted the usage trends for the average overall annual or 30-day prevalence of illicit drugs (Johnston et al., 2013).

Though overall decline in drugs have been reported recently, problems such as binge drinking, use of bath salts, marijuana, synthetic marijuana also called as spice or

K2, abuse of over the counter (OTC) and prescription drugs, and misuse of psychotherapeutic drugs have been a major concern (Johnston, O'Malley, Bachman, & Schulenberg, 2012; Johnston, O'Malley, Bachman, & Schulenberg, 2013). Alcohol still remains the most widely used substance among teenagers. The main aim of this pilot study was to evaluate the outcomes from both the SFP Home-Use DVD and SFP 7-17 group class versions by comparing them to the evidence-based SFP 10-12 norms.

### Epigenetics and Substance Abuse

Though there has been abundant research investigating trends and patterns of substance abuse as well as risk factors and protective factors, the exact etiological causes of substance abuse still remain unclear. The previous research studies conclude that there is a complex interaction between genetic, biological, and environmental factors leading to substance abuse and misuse (Tarter, 2002). Epigenetic research (Bernal & Jirtle, 2010; Champagne, 2009) with mice has demonstrated that even mice bred for certain genetic diseases can be protected by a nurturing “licking and grooming” mother mouse, thus leading to the hypothesis that nurturing parenting skills can reduce substance abuse and other inherited “diseases of lifestyle” (Kumpfer, Fenollar, Xie, & Dellinger, 2013).

The recent RCT research with African American youth by Dr. Brody and associates (Brody et al., 2009 a & b, 2010, 2012) at the University of Georgia have strengthened the prior epigenetic research evidence with mice that nurturing parenting can reduce the manifestation of genetic diseases. These researchers found that genetically at-risk youth at 18 years of age who had participated in an evidence-based family skills training program with their parents, namely the African American version of the Strengthening Families Program 10-14 Years (Kumpfer, Molgaard, & Spoth, 1996)

reported 50% lower alcohol and drug use, depression or anxiety, HIV risk, and delinquency 5 years later in a longitudinal study. Genetic risk was determined by saliva samples. Youth who had one or two short alleles for the 5-HTTLPR serotonin transporter gene were classified as high-risk for addictions.

### Research Methods

To reduce material and delivery costs to about \$5 per family and increase availability, a new universal 11-session Home-Use SFP DVD was sent out to 14,221 families by the Salt Lake City Mayor's office targeting parents and 7 to 17 year olds. When completed, they did a confidential online survey to win prizes. A new 10-session SFP group version using the DVD videos was implemented with families of 6<sup>th</sup> and 8<sup>th</sup> graders in four SLC schools as a comparison condition. The DVD disks were mailed to parents of student's ages 7 to 17 years old in Salt Lake City public schools. This allowed parents easy access to an internationally acclaimed family skills program that has been proven to work. Reaching parents and kids together in their home was expected to result in an increase in family bonding, setting boundaries, and monitoring, accompanied by a decrease in antisocial behavior, including alcohol and drug use.

In addition, Dr. Kumpfer and Jaynie Brown developed a new group curriculum with the same format as the 11-session SFP DVD Home-Use version, and included video clips from the SFP DVD. The implementation of these SFP 7-17 Years group classes with 6<sup>th</sup> and 8<sup>th</sup> graders and their parents took place in the evening in four schools in two counties in Utah. This report includes the initial pilot study evaluation outcomes from both the SFP Home-Use DVD and SFP 7-17 group class versions.

### Participants

In the year 2011-2012, 61 families or about 244 parents and children participated in viewing the 11 lessons in the SFP Home-Use DVD series and completed an online Parent Retrospective pretest and posttest evaluation instrument using the Survey Monkey® services after watching the DVD lessons. Six families failed to complete the online survey correctly so they were removed from the data analysis. While there were more parents and children participating in the SFP Home-Use DVD Project, only those clients who completed this assessment are included in this evaluation report. The new group classes using clips from the SFP DVD were held in four schools. Two were very high-risk schools with many immigrant Hispanic families. Hence, in these schools both English and Spanish language parenting and children's groups were held. The total number of participating families was 36 families or about 144 parents and children. At the end, 29 families returned their posttests.

### Research Design

By creating a synthetic comparison group using the SFP 10-12 Year norms, the evaluation design is a quasi-experimental 3 group comparison design. SFP outcome study used a post hoc statistical, 3-group quasi-experimental design to compare pre- to posttest outcomes for the 55 SFP Home-Use DVD families, 27 SFP In-Class DVD families, and 791 SFP 10-12 Year group families in SFP database. The norms families are derived from the existing SFP normative database of over 5,000 families who participated and completed SFP and used the same testing instruments. Most of these 5,000 families were from the United States, but about 300 were from other countries, primarily Ireland,

Thailand, and Portugal. The sample description and results for the Ireland sample of about 250 families can be found in Kumpfer, Xie, and O'Driscoll (2012).

### Research Procedures

The Salt Lake City Mayor's Anti-drug Coalition paid for DVDs to be duplicated and the Salt Lake City school district superintendent approved mailing the DVDs home to parents of students. Families were incentivized by encouraging PTA newsletters and the possibility of prizes that would be rewarded by lottery for families completing all 11 (introduction plus 10 lessons) DVD lessons and taking the standardized testing instrument during the spring 2011 to spring 2012. Community partners and SFP group leaders attended Parent Teacher Nights at the schools in January of 2011, August 2011, and January 2012 to recruit the families to participate in the 11-session SFP DVD groups in four elementary and middle schools. About twice as many families said they wanted to participate, but some could not come on the night selected. People in the SFP norms groups were participants who enrolled and completed the 14-session Strengthening Families Program (SFP) pre- and posttests. They completed the 14 sessions at the rate of one session per week. Their data were extracted from the SFP SPSS database based on their demographic factors. These self-report questionnaires had no names or codes on them. Informed consent forms were collected in the prior studies.

### Measures

Both the SFP Home-Use DVD viewers and the SFP 7-17 Years group class attendees used exactly the same retrospective pre- and posttest parent measure. This questionnaire includes standardized test scales on 18 parent, family, and child outcomes listed in the outcome table (Table 2.1).

Table 2.1: SFP Hypothesized Outcomes and Measures

	SFP Outcome Variables	Measures
	<i>Parent Immediate Change Objectives</i>	
1.	increase positive parenting	SFP parenting skills
2.	increase in parenting skills	SFP parenting skills
3.	increase parental supervision	SFP parenting skills
4.	increase parental efficacy	Alabama Parenting Scale
5.	increase in parental involvement	Alabama Parenting Scale
6.	decrease in parental substance use or misuse	CSAP30-day use rates
	<i>Child Change Objectives</i>	
1.	increase social skills (cooperation, assertion, responsibility, and self-control)	Social Skills Rating Scale (parent and child)
2.	reduced externalizing	POCA Child Rating Scale
3.	reduced covert aggression	POCA covert aggression scale
4.	reduced concentration problems (ADD)	POCA ADD scale
5.	reduced criminal behavior	POCA criminal behavior scale
6.	reduced hyperactivity (HD)	POCA hyperactivity scale
7.	reduced depression	POCA depression scale
	<i>Family Change Objectives</i>	
1.	increase positive parent/child relationship or family cohesion	Moos FES cohesion
2.	reduce family conflict	Moos FES family conflict
3.	increase family organization and order	Moos FES family organization
4.	increase family communication skills	Moos FES communication
5.	increased overall family strengths and resilience	Kumpfer & Dunst Family Strengths and Resilience scale

This test was used for the online survey for comparison to the norms for the same age group selected from the SFP normative database on 5,000 families. Alpha reliabilities were checked and found acceptable except for two of the scales—Youth Criminality and Hyperactivity. However, as the scale internal consistencies, an indicator of reliability, can vary by sample, they were calculated for both pre- and posttest in these samples using Cronbach's alpha ( $\alpha$ ) statistic.



Strengthening Family Program Parent/Guardian and Youth Retro  
Pre/Post Test Questionnaire

Both the parent and youth questionnaire have 21 standardized scales embedded in their testing battery that are taken from well-known and accepted standardized instruments in this field. The outcome instrument also includes the basic demographic information, client satisfaction (Kumpfer et al., 2002). The major outcome measures include five parenting measures from the Kumpfer (1989) Parenting Scale derived from the Alabama Parenting Test, plus five family variables from the Moos (1974) Family Environment Scale and the Family Strengths/ Resilience Scale (Kumpfer & Dunst, 1997). Drug and alcohol use was measured by 30-day use (CSAP GRPA). Eight children's behavior and mental health changes were measured using the Parent Observation of Child Activities (POCA-R, Kellam). Also, the parental depression was measured using the CES-D (Radloff, 1977). Each of these outcome measures are described in greater detail below.

Parent Measures

Parenting efficacy and skills will be measured using the 8-item Hawkins' CTC scales and the 10-item Kumpfer Parenting Skills scale. Alcohol and illicit drug use (substance use rates, expectation to use, and attitudes about use) will be measured using CSAP/GPRA drug use measures, which were originally used in the Monitoring the Future Surveys and National Household Surveys (Johnston, Bachman, & O'Malley 1997). Parental depression will be measured by the widely used 20-item CES-D (Radloff, 1977) depression inventory with high reliability and validity. Since the Parent Depression measure using the CES-D scale has never been done before, the principle investigator

(PI) will write a computer program to analyze these new data.

### Family Environment Measures

The Family Strengths and Resilience Assessment (12-items) is a brief 5-point Likert scale checklist created by Karol Kumpfer and Carl Dunst for the American Humane Association to improve measurement of outcomes in child abuse and neglect cases. These two scales have been found to be good intake screeners for case managers to determine family needs and family strengths that should be drawn upon in the family plan. They are also very sensitive to change, and tap positive changes in the family environment. Family conflict, organization, communication, and cohesion are also measured using modified subscales (four to six items each) on the Family Environment Scale (Moos, 1974).

### Child Measures

The risk and protective factor precursors of negative child behaviors, including child overt and covert aggression, concentration problems, hyperactivity, criminal activity, and depression, are measured by the Kellam Parent Observation of Children's Activities (POCA). These measures are modified versions of Achenbach and Edelbrock's (1988) Child Behavior Checklist (CBCL), because the POCA/TOCA has a 5-point scale versus the 3-point scale of the CBCL. Children's problem solving, social, and life skills will be measured by selected items from the CDC Youth Risk Behavior Survey used for California's Healthy Kid Initiative and from Gresham and Elliot's (1990) Social Skills Scale.

### Statistical Analyses

SFP DVD Home-Use families took an online survey using the Survey Monkey® services at maddUtah.org; families who attended the classes took paper surveys. The Project Coordinator, a doctoral student in Health Education, entered results from the class surveys. Dr. Keely Cofrin Allen, Director of Vital Statistics of the Utah State Department of Health, then analyzed all the data. Analyses were performed using SPSS v. 12 for Windows. Statistical significance was set at  $p < .05$ . Standard data analysis methods included descriptive statistics (i.e., frequency, means, percentage), and a 3 x 2 repeated measures analysis of variance (ANOVA) for the SFP outcome data. ANOVAs are very robust for unequal sample sizes. Both analyses included an analysis of the SFP parent survey 21-outcome scales with pre- and posttest means, standard deviations, change scores,  $F$  scores,  $p$ -values both within and between groups, and Cohen's  $d$  and partial eta square effect sizes. The authors supported by the program developers and implementers undertook the data interpretation. The implementers were provided email feedback on the results presented in person.

### Results

#### Baseline Differences from SFP 12-16 Norms and SFP DVD Group Version

Because of self-selection into the three groups as with any prevention program, the baselines were not equivalent. The online group reported fewer risk factors and was much higher functioning. The group that participated in the SFP DVD Home-Use Version reported fewer problems at baseline than the SFP 10-12 norms or the families that participated in the DVD group class Program. Also, the group class participating families were slightly lower risk than the SFP 10-12 Year normative families, probably

because more of the SFP 10-12 families were referred by probation officers or school counselors. Hence, it is likely there was a selection factor for lower risk families in the two DVD conditions. This is good since the new DVD was designed as a universal prevention intervention for lower risk families and not for the very high-risk families that need the selective prevention 14-session SFP.

Even though the Home-Use DVD families started the program with these higher rates of protective factors and lower levels of risk factors at the baseline pretest, about 50% of the outcome effect sizes were larger than the SFP 10-12 Year effect size means, namely family organization, family strength and resilience, parental supervision, youth concentration, overt aggression, covert aggression, depression, and three cluster scales in family, parent, and children aspects. However, the effect sizes for the SFP Group class, which used the DVD in the instruction, were larger than both the Home-Use DVD group and regular SFP 10 to 12 Year 14-session group version means.

#### Pre- to Posttest Outcome Results

There were statistically significant positive results ( $p. < .05$ ) for 21 of the 21 outcomes for the 14-session SFP 10-12 Year group norms, but only for 20 outcomes for the group class with DVD (all but decreasing Criminality), and 19 of the Home-Use DVD outcomes (all but decreasing Criminality and Alcohol and Drug Use). However, the effect sizes were larger for the group class with DVD version, but slightly smaller effect sizes for the Home-Use DVD version. One of these outcomes is typical of the outcomes for SFP 10-12, as we generally do not get statistically significant improvements in Alcohol and Drug Use by the immediate posttest and sometimes for Criminality and Hyperactivity. For the Home-Use DVD participants, the two nonsignificant outcomes

that did not achieve statistically significant improvement is likely because of lower power, low alpha reliability, and also lower risk at baseline creating a floor effect. These Home-Use DVD families started the program with very low pretest scores so there was not much room for a positive improvement.

#### Home-Use DVD Pre- to Posttest Outcomes

Different from the larger size of the mean improvements for the family, parenting, and children's outcomes compared to the SFP group class with DVD Home-Use version, the mean changes of this Home-Use DVD version were smaller, except for Family Organization ( $d = .70$  vs.  $.68$  for SFP 10-12 Years vs.  $d = .74$  for the DVD group). Part of the reason for this smaller improvement was that the families in the SFP Home-Use DVD group started with lower reported risk. Hence, they had less room for improvement by the end of the program.

In summary, 16 of 18 scales of the hypothesized and measured outcome variables were shown to have significant positive changes with a sample size of 55 families completing the online survey. If the cluster variables for parents, family, and child outcomes are included there were 19 of 21 outcomes significant. The comparison groups were the norms for the SFP 10-12 of about 791 families, and SFP 7-17 group class with DVD version of 29 families. It should be pointed out that this large sample is not all of the families who participated in the SFP Home-Use DVD in Utah, but represents only the data that were completed by May 2012 for data entry, analysis, and evaluation.

In addition, 81% or 17 out of 21 of the effect sizes ranged from medium to large. Hence, while the families are changing in more areas, the size of the change by the end of the program or the effect sizes as measured by Cohen's  $d$  were very large. The largest

effect size change was for improvements in Family Organization ( $d. = .70$ ). The next largest improvement was for Family Strength and Resilience ( $d. = .69$ ) or a large change.

Five of the five family change variables (100%) were improved significantly, including Family Conflict, which sometimes does not improve significantly by the immediate class ending or the posttest. This family relationship area of change had the largest improvements in the effect sizes ( $d$ ) with a large effect size of .70 for Family Organization, .69 for Family Strengths and Resilience, .66 for Family Communication, and .46 for Family Cohesion. This is a very positive effect. Even the area of Family Conflict had a statistically significant decrease in parent self-reported Family Conflict, with a medium effect size of  $d. = .20$  that is equal to the SFP 12-16 norms.

The next largest effects are for changes in the parent's parenting skills and style or efficacy with 100% of the five outcome variables showing significant improvements. The effect sizes are medium to large. The largest effect sizes were  $d. = .63$  for Parental Supervision improvements.

Five of the seven hypothesized youth outcome variables were found significantly improved by the posttest, namely decreased Covert and Overt Aggression, Depression, increased Concentration, and Social Skills.

#### School Group Class Using DVD Outcomes

Overall, the positive outcomes were greater for the implementation of the SFP 7-17 group class with DVD held in the schools than the other two conditions. The Parent Cluster scale was Cohen's  $d. = .77$  vs. .60 for the Home-Use DVD or  $d. = .64$  for the original 14-week group version. Likewise, the Family Cluster scale achieved a  $d. = .81$  compared to  $d. = .69$  for the Home-Use DVD and  $d. = .70$  for the SFP 10-12 Year group

class version without DVD. The largest group differences were in the Child Cluster scale with a very large  $d. = .77$  for the group class with DVD version in the schools compared to a much smaller positive change for the Home-Use DVD of  $d. = .56$  and  $d. = .47$  for the regular 14-session SFP 10-12 Years groups with higher risk youth.

This is partly because the families were higher risk at program entry and also probably because of group support. Also, it is possible that the video material presented in the 8-16 years group classes helped facilitate change better than the 14-session SFP that has no video or DVD examples or instruction. In this digital world, the youth seem to respond better to the DVD versions, especially since the engaging Youth Hosts explained why learning the “easy” skills were in their best interest in every lesson. Further, because the youth curriculum followed the same subject as the parents, there was likely more direct family discussion to reinforce the new skills.

Taken as a whole, finding positive changes in 17 of 18 scales of outcome variables for the new 10-session SFP group class DVD Program suggesting positive changes in the parenting skills of the parents, the family relationships, and in the children’s behaviors, and also alcohol and drug use, is an important finding. Changes in all of the parenting and family variables by the posttest are wonderful and should later result in greater improvements in the children. There were no negative effects detected in the measured outcomes.

Table 2.2 The Comparison of SFP 21 Outcomes Among DVD Home-Use, DVD In-Class, and SFP 10-12 National Norms

Scale Name	Sample	Change	<i>F</i>	sig	ES <i>d</i>	ES <i>d'</i>
Parental Involvement						
SFP 10-12 Norms	785	0.83	922.92	0.00	0.54	2.17
DVD Group	29	1.07	77.41	0.00	0.73	3.33
DVD Home-Use	55	0.53	46.98	0.00	0.47	1.87
Parental Supervision						
SFP 10-12 Norms	781	0.93	1220.87	0.00	0.61	2.50
DVD Group	28	1.11	89.96	0.00	0.77	3.65
DVD Home-Use	55	0.67	90.22	0.00	0.63	2.59
Parenting Efficacy						
SFP 10-12 Norms	787	0.88	982.79	0.00	0.56	2.24
DVD Group	29	0.90	58.62	0.00	0.68	2.89
DVD Home-Use	55	0.61	66.10	0.00	0.55	2.21
Positive Parenting						
SFP 10-12 Norms	788	0.82	927.27	0.00	0.54	2.17
DVD Group	29	1.06	56.70	0.00	0.67	2.85
DVD Home-Use	55	0.55	60.83	0.00	0.53	2.12
SFP Parenting Skills						
SFP 10-12 Norms	782	0.55	701.80	0.00	0.47	1.90
DVD Group	29	0.51	40.31	0.00	0.59	2.40
DVD Home-Use	55	0.39	35.04	0.00	0.39	1.61
Parent Cluster Scale						
SFP 10-12 Norms	761	0.79	1338.9	0.00	0.64	2.65
DVD Group	28	0.91	89.23	0.00	0.77	3.64
DVD Home-Use	55	0.54	82.51	0.00	0.60	2.47
Family Cohesion						
SFP 10-12 Norms	791	0.83	823.03	0.00	0.51	2.04
DVD Group	28	0.95	53.45	0.00	0.66	2.81
DVD Home-Use	55	0.55	45.00	0.00	0.46	1.83
Family Communication						
SFP 10-12 Norms	777	0.99	1551.07	0.00	0.67	2.83
DVD Group	29	1.06	71.29	0.00	0.72	3.19
DVD Home-Use	55	0.65	105.62	0.00	0.66	2.80
Family Conflict						
SFP 10-12 Norms	760	(0.45)	191.03	0.00	0.20	1.00
DVD Group	29	(0.47)	18.41	0.00	0.40	1.62
DVD Home-Use	55	(0.27)	13.47	0.00	0.20	1.00
Family Organization						
SFP 10-12 Norms	786	1.23	1649.32	0.00	0.68	2.90
DVD Group	28	1.21	75.76	0.00	0.74	3.35



Table 2.2 continued

Scale Name	Sample	Change	<i>F</i>	sig	ES <i>d</i>	ES <i>d'</i>
DVD Home-Use	55	0.88	123.29	0.00	0.70	3.02
Family Strength/ Resilience						
SFP 10-12 Norms	776	1.00	1532.63	0.00	0.66	2.81
DVD Group	28	0.96	95.36	0.00	0.78	3.76
DVD Home-Use	55	0.77	120.19	0.00	0.69	2.98
Family Cluster Scale						
SFP 10-12 Norms	735	0.93	1703.42	0.00	0.70	3.05
DVD Group	27	0.98	108.52	0.00	0.81	4.09
DVD Home-Use	55	0.67	122.04	0.00	0.69	3.01
Concentration						
SFP 10-12 Norms	739	0.54	772.43	0.00	0.51	2.05
DVD Group	28	0.64	77.34	0.00	0.74	3.38
DVD Home-Use	55	0.41	67.62	0.00	0.56	2.24
Covert Aggression						
SFP 10-12 Norms	751	(0.27)	160.81	0.00	0.18	0.93
DVD Group	28	(0.27)	40.11	0.00	0.60	2.44
DVD Home-Use	55	(0.19)	26.89	0.00	0.33	1.41
Criminal Behavior						
SFP 10-12 Norms	760	(0.03)	5.46	0.02	0.01	0.17
DVD Group	28	(0.02)	1.00	0.33	0.04	0.38
DVD Home-Use	55	(0.01)	0.33	0.57	0.01	0.16
Child Depression						
SFP 10-12 Norms	750	(0.35)	266.57	0.00	0.26	1.19
DVD Group	28	(0.38)	18.29	0.00	0.40	1.65
DVD Home-Use	55	(0.20)	24.12	0.00	0.31	1.34
Hyperactivity						
SFP 10-12 Norms	758	0.06	9.25	0.00	0.01	0.22
DVD Group	28	0.29	13.41	0.00	0.33	1.41
DVD Home-Use	55	0.07	4.00	0.05	0.07	0.54
Child Overt Aggression						
SFP 10-12 Norms	756	(0.39)	338.69	0.00	0.31	1.34
DVD Group	27	(0.31)	43.43	0.00	0.63	2.58
DVD Home-Use	55	(0.28)	55.03	0.00	0.51	2.02
Social Behavior						
SFP 10-12 Norms	729	0.31	425.47	0.00	0.37	1.53
DVD Group	28	0.38	33.13	0.00	0.55	2.22
DVD Home-Use	55	0.20	30.47	0.00	0.36	1.50
Child Cluster Scale						
SFP 10-12 Norms	673	0.35	587.90	0.00	0.47	1.87

Table 2.2 continued

<b>Scale Name</b>	<b>Sample</b>	<b>Change</b>	<b><i>F</i></b>	<b>sig</b>	<b>ES <i>d</i></b>	<b>ES <i>d'</i></b>
DVD Group	27	0.36	86.22	0.00	0.77	3.64
DVD Home-Use	55	0.24	67.86	0.00	0.56	2.24
Parental ATOD use						
SFP 10-12 Norms	764	(0.08)	25.15	0.00	0.03	0.36
DVD Group	29	(0.09)	3.93	0.03	0.12	0.75
DVD Home-Use	55	(0.01)	0.20	0.66	0.00	0.12

### Discussion

This pilot study suggests positive changes with reasonably large effect sizes are possible with the much less expensive SFP Home-Use DVD. The outcomes for the parents were only about 6% lower than the traditional 14-session SFP 10-12 Years. However, the use of the DVDS in the 11-session SFP 8-16 groups increased positive parenting outcomes by 20%. Family outcomes were equivalent in the Home-Use DVD, but increased by 16% if used in the new SFP 8-16 Group curriculum with the DVD, even though it was four session shorter (11- vs. 14-sessions). The Children's Cluster Scale outcomes were much larger using the DVD, 19% larger than the SFP 10-12 Year norms for the Home-Use DVD, and a wonderful 64% larger than the SFP 10-12 Year norms for the group version with DVD.

The Home-Use DVD is very effective as a universal prevention approach for lower risk and higher functioning families, but the use of the DVD within the group sessions dramatically improves the outcomes particularly for the higher risk youth and families. Both new 11-session versions (Home-Use and group class) are very useful in school implementations. The cost-benefit ratio of the new Home-Use DVD should be very high given the low cost. However, more replications are needed with larger samples in RCTs as well as some longitudinal outcomes.

### Conclusion

This pilot study of the new 11-session SFP DVD suggests the computer delivered and much less costly DVD is almost as effective as the existing 14-session SFP. A more cost-beneficial, computer-delivered video version of SFP has the potential to create a dramatic breakthrough in low-cost or no-cost dissemination of EBPs to create major

public health impact in reducing teen ATOD use, and associated mental, physical, and social costs.

## References

- Achenbach, T.M., & Edelbrock, C. (1988). *Child behavior checklist (CBCL)*. Center for Children, Youth, & Families. Burlington, VT: University of Vermont press.
- Arthur, M. W., Hawkins, J. D., Pollard, J. A., Catalano, R. F., & Baglioni, A. J. (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors: The communities that care youth survey. *Evaluation Review*, 26, 575-601.
- Bachman, J. G., Wadsworth, K. N., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (1997, February 3). National press release *Drug use in young adulthood: U-M's monitoring the future study identifies causes*. Ann Arbor, MI: The University of Michigan News and Information Services,
- Foxcroft, D. R., Ireland, D., Lister-Sharp, D.J., Lowe, G., & Breen, R. (2003). Longer-term primary prevention for alcohol misuse in young people: A systematic review. *Addiction*, 98, 397-411.
- Gresham, F.M., & Elliot, S.N. (1990). *Social skills rating system*. Circle Pines, MN: American Guidance Service.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2011). *Monitoring the future national results on adolescent drug use: Overview of key findings, 2010*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2012). *Monitoring the future national results on adolescent drug use: Overview of key findings, 2011*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2013). *Monitoring the future national results on drug use: 2012 overview, key findings on adolescent drug use*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.
- Kumpfer, K. L. (1997). What works in the prevention of drug abuse: Individual, school and family approaches. DHHS, *Center for Substance Abuse Prevention. Secretary's Youth Substance Abuse Prevention Initiative: Resource Paper*, 69-105.
- Kumpfer, K. L., Alvarado, R., Smith, P., & Bellamy, N. (2002). Cultural sensitivity and adaptation in family based prevention interventions. *Prevention Science*, 3(3), 241-246.

- Kumpfer, K.L., DeMarsh, J.P., & Child, W. (1989). *Strengthening Families Program: Children's skills training curriculum manual, parent training manual, children's skill training manual, and family skills training manual* (Prevention Services to Children of Substance-abusing Parents). Social Research Institute, Graduate School of Social Work, University of Utah.
- Kumpfer, K. L., Fenollar, J., Xie, J., & Bluth Dellinger, B (2013). Resilience framework: Resilience and resourcefulness in the face of chronic family adversity. Ch. 16 (pp. 259-273). In M. Celinski & K. Gow (Eds.), *Continuity versus creative response to challenge: The primary of resilience & resourcefulness in life and therapy* (pp. 259-272). New York: Nova Science Publishers Inc.
- Kumpfer, K. L., Xie, J., & O'Driscoll, R. (2012). Effectiveness of a culturally adapted Strengthening Families Program 12-16 Years for high risk Irish families. *Child and Youth Care Forum*, 41(2), 173-195.
- Miller, T., & Hendrie, D. (2008). *Substance abuse prevention dollars and cents: A cost-benefit analysis*, DHHS Pub. No. (SMA) 07-4298. Rockville, MD: Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration.
- Moos, R., & Trickett, E. (1974). *Classroom environment scale manual*. Palo Alto, CA: Consulting Psychologists Press.
- Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1(3), 385-401.
- Reynolds, C. R., & Kamphaus, R. W. (2004). *Behavior assessment system for children* (2<sup>nd</sup> ed.), (BASC-2). Circle Pines, MN: AGS.
- Substance Abuse and Mental Health Services Administration. *Results from the 2010 national survey on drug use and health: Summary of national findings*, NSDUH Series H-41, HHS Publication No. (SMA) 11-4658. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2011.

## CHAPTER 3

MIXED METHOD ANALYSIS: PERCEPTIONS OF ASIAN INDIAN  
PARENTS ABOUT ADOLESCENT SUBSTANCE ABUSE AND  
COMPUTER TECHNOLOGY-BASED SFP 7-17  
DVD PROGRAM

### Abstract

Though Asian Indian is one of the largest growing minority groups in the U.S, there is a dearth of research regarding health problems in this group, including substance abuse. They are generally portrayed as an “ideal community” with relatively less health problems. However, the demographic transition, wide gap between the American and Eastern culture, and different acculturation levels are about to bring certain changes in alcohol and other drug use patterns among them.

The aim of the study was to explore the views and thoughts about adolescent substance abuse among Asian Indian parents residing in Utah as well as to examine the effects of the newly developed Home-Use Computer Technology-Based Instruction (CBI) version of SFP 7-17 Year DVD Program among Asian Indian families by conducting in-depth interviews. The study employed a qualitative research method using thematic analysis of in-depth interviews.

The DVD was distributed to 32 immigrant Asian Indian parents using a convenient sample. Twenty-six of them participated in the retrospective pre/posttest and 11 of them participated in an in-depth interview after the program completion. Initially, two independent researchers identified the recurring codes within the transcripts by assigning color codes to sort and organize the data. This was followed by a meticulous examination of the interconnections and patterns between the coded responses, leading to identification of the general categories and themes. Later, these researchers collaboratively discussed, compared, and contrasted the themes openly.

The results suggest that the SFP DVD 7-17 Years Program was highly effective in improving parental outcomes such as positive parenting, parental efficacy, parental



monitoring and supervision, reduction in parental alcohol use; family outcomes such as family cohesion, family communication, and family strength and resilience as well as reduction in family conflicts. The results also suggested improvement in prosocial behaviors and decrease in depression among children.

The SFP DVD 7-17 Years Program could be the potential solution to increase the participation and effectiveness of substance abuse prevention programs among ethnic families in a highly cost effective manner.

### Introduction

#### Problem Statement

The United States has been experiencing a major racial, ethnic, and age-related demographic shift since the last couple of decades and will continue this transformation in the near-term. As of now, minority individuals comprising about one-third (37%) of the U.S. population are predicted to become the majority by year 2060, with the country estimated to be 57% minority population (CDC, 2013 b; U.S. Census Bureau, 2012).

Among the minority groups, Asians were the fastest-growing race or ethnic group entering the U.S. through international immigration between the years 2000 - 2010 (U.S. Census Bureau, 2013). Their population increased more than four times faster than the total U.S. population, by 43% from 10.2 million in 2000 to 14.7 million in 2010 (U.S. census, 2011). Overall, the Chinese, Asian Indian, and Filipino populations constitute approximately 60% of the Asian population residing in the U.S. The Chinese, the largest Asian minority community, accounted for 4 million of the total U.S population, followed by Filipinos (3.4 million), Asian Indians (3.2 million), Vietnamese (1.9 million), Koreans (1.7 million), and Japanese (1.3 million) (CDC, 2013 a). By year 2050, it is predicted that

the Asians will comprise approximately 9.2% of the total U.S. population (40.6 million) as compared to only 4.8% (14.7 million) Asians as of 2010 (CDC, 2013 a). In the next 50 years, the new immigrants and their growing families will account for 82% of the total population increase in the U.S. (Pew Research Center, 2011).

This demographic transition will certainly bring about certain changes in alcohol and other drug use patterns among Asian communities residing in the United States. Due to recent increase in the Asian Indian (AI) population in the U.S, this group has been paid relatively low attention, resulting in a dearth of research related to their culture, traditions, and health problems, including substance abuse patterns. Asian Indian now being one of the largest Asian minority group growing in the U.S, it is crucial to take this minority group into consideration for health promotion and preventive research.

One of the reasons attributed to the paucity of research among this subset of the population is owing to its heterogeneous character (Bhattacharya, 2002). The Asian population comprises many different groups of people having diverse ethnicities and origins, such as Asian Indian, Pakistani, Bangladeshi, Nepali, Thai, Sri Lankan, Chinese, Filipino, Korean, Japanese, Vietnamese, Laotian, Cambodian, and Malaysian. Clustering this diverse group into one large category further eludes the understanding on the array of problems faced by them. In order to understand and address the problems faced by these subsets of population, it is crucial to segregate and categorize them according to their countries of origin.

#### Substance Abuse Rates in Asians

The overall prevalence of drug use among Asian youth appears much lower than American youth. According to the National Survey on Drug Use and Health (NSDUH)

2011, Asian adolescents between the age group of 12-17 years had lower substance use rate than the national average of past month cigarette use (3.9 vs. 10.2%), alcohol use (7.4 vs. 16.0%), marijuana use (2.9 vs. 6.9%), and nonmedical prescription type drug use (1.8 vs. 3.3%).

Furthermore, the Asian adolescents showed diverse substance abuse patterns. Asian adolescents who were born in the U.S. had a higher rate of past month alcohol use than the Asian adolescents born outside the U.S (8.7 vs. 4.7%), while the Asian adolescents born outside the U.S. showed higher use of prescription type drugs as compared to the Asian adolescents born in the U.S. (2.7 vs. 1.4%). However, none of the research studies or national surveys reported substance abuse prevalence exclusively among Asian Indian adolescents.

Though it is true that the substance abuse prevalence in the Asian Indian community is relatively lower as compared to White adolescents, the factors such as cultural differences, different parenting styles, extreme expectations of parents for the children to excel in academics, peer pressure, and different acculturation levels could lead to increase in family conflicts, communication gap among family members, depression, and disturbed family environment. These are the proven precursors for initiation of substance use among the adolescents (Arthur et al., 2002; Hawkins et al., 1992).

Previous studies done among American Chinese and Japanese adolescent found that their substance use prevalence rate was similar to the White adolescents depending on their level of acculturation (Hong, Huang, Sabri, & Kim, 2011; Kitano & Chi, 1990). Bhattacharya (2002) predicted that Asian Indian adolescents could follow the same trend as that of Chinese and Japanese populations; however, this trend is yet to be confirmed.

Poulsen (2009) reported that, as the American born and raised children of immigrant Indian parents are caught up between two drastically different cultures, they are at risk to numerous behavioral and social problems. The vast cultural gap creates an identity crisis among the adolescents due to confusion and misunderstanding of their own cultural identity. The acculturation and cultural identity crisis further puts this young generation at risk to unsafe health behaviors. With the increasing number of Asian Indians in the country, it is necessary to record their health problem, including substance abuse patterns and trends.

#### Causes of Underestimation of Asian's Substance Use

Particularly, in regard to substance abuse, there has been a misconception that the substance use prevalence among Asian/Pacific Islanders is much lower as compared to the non-Asian populations (NIDA, 1998). However, some research studies suggest that this may be due to lack of drug-related research studies and underrepresented samples of the Asian population in the studies (Bhattacharya, 2002; NIDA, 1998; Thai, Connell, & Tebes, 2010). The Asian population does not tend to use the treatment services more often as they are not culturally appropriate or tailored to the needs of this population. In fact, their alcohol use rates in their countries of origin is much higher than the alcohol use rate among Whites in the U.S. (Kuramoto, 1994).

One of the major risk factors for substance abuse among immigrant population is the cultural gap that creates an identity crisis in the children and different acculturation levels between the parents and children, leading to frequent family conflicts (Chung, Flook, & Fuligni, 2009; Farver, Bhadha, & Narang, 2002).

In a tested structural equation model (SEM) theory conducted among more than

500 Thai youth, Rodnium (2007) found that increased differential generational acculturation could lead to increase in family conflict and later substance abuse and delinquency. Moreover, the majority of the universal prevention programs are developed keeping typical White middle-class values in mind that are not culturally appropriate or tailored to the specific needs of ethnic families. Traditional ethnic families generally favor family systems change approach as compared to individual change approach for prevention because of the cultural values they stress on, such as interconnection, reciprocity, and filial responsibility (Lawton, Ahmad, Hanna et al., 2008; Vissandjee et al., 2007).

Previous meta-analyses have confirmed that family-based interventions have effect sizes two to nine times larger than youth-only interventions, on average, in decreasing youth conduct problem behaviors for both traditional as well as acculturated minority families (Tobler & Kumpfer, 2000). This study in our knowledge will be the first of its kind to consider immigrant Asian Indian population and explore their views, perceptions about substance abuse amongst adolescents, and the effect of the Home-Use SFP 7-17 Years DVD Program on their behavior and lifestyle.

The main aims of this study were:

- 1) To explore the views about adolescent substance use and abuse among Asian Indian parents residing in Utah.
- 2) To explore immigrant Asian Indian parent's perception about the CBI SFP 7-17 Years DVD Program and examine the program effectiveness among Asian Indian families.

- 3) To discuss the implications of the use of computer technology in delivery and dissemination of substance abuse prevention programs among ethnic population.

### Research Methods

A qualitative analysis approach using thematic analysis technique seemed the most appropriate fit taking the research questions of this study into consideration.

### Research Questions

- 1) What are the views of Asian Indian parents residing in Utah about adolescent substance use and abuse?
- 2) What are their perceptions about the Computer Technology-Based Home-Use Strengthening Families Program (SFP) 7-17 Years DVD Program? (Qualitative analysis – in-depth interview).
- 3) What were the effects of the CBI SFP 7-17 Years DVD Program on the participating Asian Indian families upon program completion? (Measuring the program effectiveness).

### Program Description

The original 14-session Strengthening Families Program (SFP) 6-11 Years was developed in 1982 on a National Institute on Drug Abuse (NIDA) research grant as the first parenting program for high-risk addicted families with children ages 6 to 11 years (Kumpfer et al., 2010). At least 12 randomized control trials, with most conducted by independent research teams and several field studies, have found the SFP 6-11 Years Program to be effective in reducing risks and actual substance abuse in the general population and also in at-risk youth (Kumpfer & Alvarado, 2003; Kumpfer, Alvarado,

Tait, & Whiteside, 2007; Kumpfer et al., 2010; Kumpfer, 2013; Petrie, Bunn, & Byrne, 2007).

Comparative effectiveness reviews such as the Oxford University Cochrane Collaboration Reviews in Medicine and Public Health have found SFP to be twice as effective as any other family or youth-only prevention program in reducing alcohol and drug use (Foxcroft et al., 2003; 2012). However, cost-benefit studies (Miller & Hendrie, 2008) do not rate SFP to be as cost-beneficial with \$11 saved per dollar spent as compared to youth-only school substance abuse prevention programs with \$20 to \$33 cost/benefit ratios. This is because implementation of SFP is relatively expensive, ranging from about \$880 per family for the 7-session version for the universal population to \$1400 per family for the 14-session version for higher risk families. With fewer funds available for prevention today, more cost-efficient methods of delivering the SFP content to families was needed. Hence, over the past 5 years, Mothers Against Drunk Driving (MADD-Utah) and Lutra Group partnered to create a new 11-session Home-Use SFP 7-17 Years DVD that greatly reduced the cost of implementation per family.

The new SFP DVD 7-17 Years Program has been adapted from the theoretically – grounded, evidence-based SFP 6-11 Years, which is a 14-session family skills training program designed to improve parenting skills, enhance family relationships, and increase children's social and life skills. The SFP DVD had a total of 10 lessons along with one introduction session and each lesson builds on the teachings of the previous lessons. If even only 20% as effective as the group version, the cost at \$4 per family would make SFP the most cost-beneficial substance abuse prevention program. The pilot study with distribution through schools in Salt Lake City indicated that the parenting and family

outcome variables for the Home-Use DVD program were about 80%, on average, of the effect sizes of the 14-session group versions. However, when the DVD was used in an 11-session group curriculum that matched the DVD sessions, the results were better than the regular 14-session SFP groups. Actually, the positive improvements in the youth were about 20% larger in effect sizes for the DVD group (Kumpfer et al., in press).

Haggerty et al. (2006 & 2007) conducted controlled clinical trial to compare the efficacy of parent and adolescent group-administered (PAG) and self-administered (SA) formats of the Parents Who Care Program, a universal substance abuse prevention program for families of young adolescents, with a no-treatment control group. The SA format families were asked to complete a 117-minute video divided into 18 sections and a workbook within a 10-week time frame at their homes, whereas the PAG attended seven weekly group meetings of 2 to 2 ½ hours in length held in schools. The results reported higher program initiation in African American families for the self-administered format. Further analysis reported that the chances of initiating sex or substance use were reduced by almost 70% for African American teens in the SA condition and 75% for the African American teens in the PAG compared to controls. These results indicate the increased effectiveness of self-paced, home-use computer programs for higher risk families where parents have to work more and cannot attend group interventions as easily.

Another computer-based intervention called Parenting Wisely (PW) used a brief self-administrated parent training CD-ROM program that taught strategies such as contracting, contingency management, specific commands, I statements, active listening, assertive discipline, praise, and role modeling behavior to the parents. In a randomized study, Kacir and Gordon (1999) investigated the effect of PW CD-ROM on parenting



practices. Thirty-eight mothers were assigned to either PW program or a no-treatment control group. Mothers enrolled in the PW CD-ROM program showed increased knowledge of adaptive parenting practices and children reported significantly lower rates of behavior problems as compared to the wait-list control group.

Schinke, Cole, and Fang (2009), conducted a randomized control trial among 202 pairs of adolescent girls and their mothers to evaluate a gender-specific, computer-mediated intervention program in order to prevent underage drinking among early adolescent girls. The subjects participated in an online pretest survey followed by randomization into intervention and control groups. Subjects in the intervention group underwent a computer program aimed to strengthen mother-daughter relationships and to teach girls the skills for conflict management, resisting media influences, effective refusing skills for alcohol and drugs, and correcting peer norms about underage drinking, smoking, and drug use. Mothers reported improved communication skills as well as improvement in their perceptions and applications of parental monitoring and rule setting. Adolescent girls showed improvement in the communication skills, conflict management and alcohol use-refusal skills, self-efficacy, healthier normative beliefs about underage drinking, and also reported less alcohol use and lower intentions to drink as adults.

### Research Methodology

The chief aim of the qualitative research study was to explore the views and perceptions about the newly developed SFP 7-17 Years DVD Program among Asian Indian (AI) parents living in Utah and measure the program effectiveness among the AI families who have completed watching the DVD, by conducting in-depth interviews.

The research questions of this study called for a qualitative approach. In-depth semistructured, but open-ended interviews were set up with the Asian Indian immigrant parents residing in the state of Utah. A convenient sampling technique was used to recruit Asian Indian families from Salt Lake City and County, and Utah County. The recruitment was done by flyers distributed near Indian temples and grocery stores to call for participation in the research study. The SFP DVD was marketed to them as a parenting skills training and family intervention, and not specifically as a substance abuse prevention program. The researcher, being of the Asian Indian ethnicity, felt that the Asian Indians would be unwilling to watch the DVD, if the DVD was marketed as a substance abuse prevention program.

### Participants

A total of 32 copies of SFP 7-17 Years DVDs were distributed to the Asian Indian families. Out of the 32 subjects, 26 subjects also participated in a quantitative retrospective pre- and posttest SFP standardized survey. (The results of the quantitative analysis are discussed in Chapter 4.) The participants, who finished watching the DVD and who were willing to participate in the qualitative interview, made a phone call to the researcher to set up the interview time and place. The interviews were conducted on a first-come first-serve basis by the primary researcher. They were conducted at the participant's homes and were tape-recorded with their permission and later transcribed. The researcher simultaneously took notes while recording the interview. The researcher conducted the interviews until the point of data saturation was reached. The data saturation was reached by the end of the tenth interview. A total of 11 interviews were conducted.

### Inclusion Criteria for Asian Indian Families

Inclusion criteria for the participating families was reading or understanding at least 8<sup>th</sup>-grade English. The participants had to be of Asian Indian origins who have immigrated to the U.S. in the last 10 years. Also, they had to have a 6-18-year-old child or children living with them and born and brought up in the U.S. They should have had a stated willingness to complete the SFP 7-17 Year DVD family skills training program and have signed the informed consent form. Families had to also have access to a computer/ laptop or a TV with a DVD player.

### Exclusion Criteria for Asian Indian Families

Parents who could not read simple 8<sup>th</sup>-grade English were not encouraged to enroll as they would have difficulty benefitting from the program because there are written materials in the DVD guidebook and the home practice assignments were in 8<sup>th</sup>-grade English. Another exclusion criterion was the participants who were not of Asian Indian decent who had immigrated to the U.S. more than 10 years before and only had children below 6 years of age or teenagers above 18 years of age. Families not having access to computer/ laptop or a TV with DVD players were also excluded from the study.

### Data Collection Methodology

Interviews were conducted at their homes and were tape-recorded with permission and later transcribed. The researcher simultaneously took notes while recording the interview. More focused questions were asked during the interview sessions to clarify information or guide the participants back to the topic. Each interview lasted approximately 1 to 2 hours. In order to prevent participants deviating from the main

topic, a semistructured interview protocol was used as a reference for the interviews as follows.

#### Interview Reference Guide

- 1) What do you think when you listen to the word “substance abuse” for the first time?
- 2) Tell me about your thoughts about substance abuse among Asian Indian teenagers residing in the U.S?
- 3) Where do you get your information about substance abuse or drugs?
- 4) Tell me about your experiences with substance abuse among Asian Indian teenagers residing in the U.S?
- 5) What could be some of the protective factors among the Asian Indian adolescents that could guard them against substance abuse?
- 6) What could be some of the risk factors among the Asian Indian adolescents that could put them at risk for underage drinking or substance abuse?
- 7) How will you describe a typical Indian parenting style? (You can discuss how you were brought up as a kid and compare how you are bringing up your kids.)
- 8) Has your parenting style changed since you arrived in the U.S?
- 9) What do you think about the newly developed Home-Use SFP DVD version?
- 10) How much of the DVD did you watch in terms of number of sessions?
- 11) What effect has the DVD had on your relationship with your kids and family members?

12) What were some of the things that made it harder to complete the DVD sessions?

13) Tell me about problems/ barriers you've encountered while watching the DVD for Asian Indian families?

14) What are the things you liked the most about the DVD?

15) What do you think will be the most effective distribution or broadcasting method for this intervention?

16) Do you have any recommendations or ideas (something you will like to add to the DVD) on how to make the DVD more useful for Asian Indian families?

17) Is there anything further that you would like to share with us that would be helpful for us to know about your experience with substance abuse or with the DVD?

Apart from the demographic information, the protocol questions were chiefly categorized into three main sets. The first set of questions was developed to reveal participant's knowledge and perceptions about substance abuse in general and substance abuse among Asian Indian teenagers. The second set of questions was developed to elicit responses about the newly developed CBI Home-Use SFP 7-17 Years DVD Program such as their thoughts and views about the DVD, its utility, barriers, and facilitators, if any, while watching the DVD at home, and the third set of question investigated the effect of DVD on their family relations and lifestyle, and any recommendations or ideas they had on how to make the DVD more useful for ethnic families and Indian Asian families, in particular. After the interview, the parents also participated in the retrospective pre- and posttest SFP questionnaire handed out by the researcher. (The results of the quantitative analysis are discussed in Chapter 4.) The informed consent

forms were collected from all the participants at the beginning of the interview. To ensure privacy, the parents answered the self-report retrospective questionnaires in a closed room and had no names or codes on them.

### Data Analysis

After tape recording the interviews, each interview was transcribed verbatim into a word processing document by the researcher. The process yielded 11 transcripts totaling 124 pages. The reference guide helped the interviewer to ask question in a systematic chronological order starting from information gathering towards open-ended triggers in order to reveal the deeply residing constructs and themes. To ensure a thorough quality control and credibility of what has been recorded during a research interview, member checking was done by allowing participants to critically analyze the findings and comment on the transcripts handed to them (Barbour, 2001; Creswell, 2007). Notes and recordings for each interview were transcribed and thoroughly reviewed for common themes. All data collected during the interviews were organized into thematic constructs.

After analyzing the interview transcripts, using the thematic analysis procedure recommended by Braun and Clarke (2006), several principle themes and constructs were identified, categorized, and refined. Initially, two independent researchers identified the recurring codes within the transcripts by assigning color codes to sort and organize the data. This was followed by a meticulous examination of the interconnections and patterns between the coded responses, leading to identification of the general categories and themes. Later, these researchers collaboratively discussed, compared, and contrasted the

themes openly. Most of the categories were significantly consistent across the two researchers.

### Results

The results are presented as key themes and subthemes with respect to each of the research question.

#### **Theme 1: Immigrant Asian Indian parents' views and experience about substance abuse among Asian Indian teenagers residing in the U.S.**

Subtheme 1.1: Higher perceived threat towards substance abuse among teenagers residing in India as compared to the Indian teenagers residing in the U.S. by the Asian Indian parents living here.

Almost all the Asian Indian parents (11 out of 11) residing in the Utah felt that substance abuse is more of a serious problem among teenagers residing in India as compared to Asian Indian teenagers residing in the U.S.

One participant mentioned that, *"I think it's more of a severe problem in Indian teenagers than kids living here. When I travel to India, I see so many young people smoking cigarettes and drinking in bars....they think it's cool to do that...it's a trend in India to hang out in bars and drink and smoke."*

According to these parents, the reasons attributed to high substance abuse among teenagers residing in India were the following:

- 1) Imitation of the Western culture as it is perceived cool and trendy among the teenager population;
- 2) Influence of social media such as television, movies, commercials, and Internet;

- 3) Easy availability of what would be considered illicit drugs in the U.S. in India due to the lack of laws, rules, and regulations for selling and buying of drugs;
- 4) Higher stress placed on teenagers due to educational system and their parents to achieve excellence in academics and school performance in India;
- 5) Communication gap between parents and their kids, and
- 6) Lack of parental involvement in their child's life.

Subtheme 1.2: Perceived substance abuse as a lesser threat among Asian Indian teenagers residing in the U.S.

Most parents (10 out of 11) felt that substance abuse is not a major problem among Asian Indian families residing in the U.S. According to these parents, the reasons attributed to lesser substance abuse among adolescents in Asian Indian families residing in the U.S. were the following:

- 1) Less stressful and financially stable lifestyle;
- 2) Better education system in the United States, thus giving children a greater variety of options to choose their careers from and putting less pressure on families;
- 3) Greater adherence to Indian culture and religion. The findings of this study were very similar to the results of the study done by Dasgupta, 1998. The Asian Indian families residing in Utah maintained an intact traditional value system as compared to the families in India.
- 4) Better laws and regulation regarding illicit drug misuse and drug trafficking.



## **Theme 2: Immigrant Asian Indian parent views and perceptions about SFP 7-17 Years DVD Program.**

Subtheme 2.1: Perceived participation in SFP 7-17 Years DVD Program as an innovative experience.

Almost all the participants (10 out of 11) viewed it as a positive and an innovative experience owing to the fact that they had never participated in a family skills and training program like this before. They reported that they were able to relate to the scenarios and experiences from the DVD, and felt the DVD content was relevant to their families.

One participant stated, *“The DVD has something for everybody in it. It discusses the scenes and problems from everybody’s standpoint – my kids could actually see my situation and the reason I sometimes behave strictly with them and I could see why my kids sometimes behaved so stubbornly.”*

Another participant expressed that, *“We saw our family in the DVD. Those parents and kids in the DVD went through the same situations that we go through daily. You need to see things from the third person’s view to understand the situation correctly and I think the DVD showed us this.... we could see where we go wrong when we saw other people behaving in the same way as we do.”*

Subtheme 2.2: Facilitators for watching SFP 7-17 Years DVD Program

One participant commented that, *“It was an interesting experience for my family; we had never tried anything like this before. It’s like watching television episodes each week.”*

Another participant said, *“When you have a teenager in your home, you got to try everything possible in this world to manage them. I am glad I watched it and my daughter watched it. We learned so many new things.”*

The most commonly reported aspects of the program as helpful were its user friendliness, simple lay out of the DVD, practicability of the program with hands-on tools, easy printing and downloading option, and inclusion of tracking and assignment sheets to assist them learning the parenting techniques.

#### Subtheme 2.3: Barriers while watching SFP 7-17 Years DVD Program

The discussion about barriers to participate or watch the SFP 7-17 Years DVD included skepticism related to the efficacy of family skills and training programs and its applicability to Asian Indian population. Six out of 11 parents watched the DVD alone before sharing it with their kids.

*“I was a bit doubtful to show it to my daughter initially. My wife and me first watched it before sharing it with her. I didn’t know what exactly was there in the DVD... I don’t want to expose my daughter to the things that are not suitable for her age and our culture.”*

Asian Indians seem to have lack of faith in the parent training and family skills programs owing to the differences in the Eastern and Western parenting styles as well as the presumed notion that the programs are not applicable and culturally tailored to them.

*“I initially thought that the DVD must be for American families. But after watching the DVD, I realized that parents of teenager kids, no matter of any country or race, suffer for similar problems and this DVD tells how to deal with them.”*

The majority of universal prevention programs are developed for typical American culture taking White, middle class values into consideration. There is abundant research documenting the need of culturally appropriate and tailored programs directed towards ethnic populations in order to have a significant public health impact (Kreuter et al., 2003; Kumpfer et al., 2002; Nation et al., 2003). Though not tailored, the SFP DVD seems to be culturally appropriate for the Asian Indian community.

One of the important barriers that emerged from the interview was the lack of time to maintain the pace of the DVD due to professional and personal responsibilities and prioritizing participation in the program.

*“I know it’s more convenient to watch the DVD at home, but we couldn’t maintain the recommended pace of the DVD. Sometimes we watched two lessons at a time and sometimes if we were too busy we couldn’t watch it for two or three weeks.”*

Few parents (9 out of 11) felt that there was too much information packed in the DVD, making it lengthy.

*“There were so many new things to be learned from the DVD. I sometimes felt overwhelmed.”*

This is an excellent point made by the parents since the DVD is very information dense. It was hard to cover the entire SFP 14-session content in 10 sessions and add new brain research. It is hoped that the parents and youth can review each lesson multiple times to learn the content. Concerning the parents’ observation that the DVD could have been made shorter with less information, if that were done, it would not cover all of the major risk and protective factors and skill processes that make SFP effective with high-risk families. The length of the program is consistent with principles of effective family

focused interventions, namely that skills training programs with high-risk families should be 10-45 weeks and 25-50 hours long (Kumpfer & Alvarado, 2003; Nation et al., 2003). Hence, the minimal number of lessons absolutely necessary to achieve changes in parenting skills and behaviors is 10 lessons, and if we reduce the number of lessons, it will not be effective.

#### Subtheme 2.4: Cultural adaptation of the DVD to the Asian Indian population

Though not culturally tailored specifically to the Asian Indian population, the participants felt that the DVD lessons were applicable to them and could relate to the actor, families, and instances from the DVD. When delving into the discussion on the recommendations for improving the program, few participants (6 out of 11) felt that a separate lesson on bullying should be added to the DVD.

*“Bullying is very common in schools here. My child experienced bullying at her previous school. It was very depressing for her and for us too. ...May be you should add a lesson on bullying and how parents and kids should handle it. I don’t want my kid to be bullied, but also don’t want her to be a bully.”*

Another idea that emerged during the recommendation discussion was adding a lesson on culture differences and humility. Ten out of eleven participants felt that adding a lesson on cultural humility will be helpful for their kids to understand and accept their culture while teaching people from other ethnicities and cultures to recognize the cultural differences.

*“We come from different cultures and follow different traditions. Some people here don’t know anything about our culture and we understand that...but I think everyone should have respect for each other’s culture. In Indian culture, children stay*

*with their parents until they get a job or get married. There is nothing funny in it. I think if you add something about how to acknowledge other cultures and respect them, it will be very helpful.”*

**Theme 3: Effects of CBI SFP 7-17 Years DVD on the participating Asian Indian families after program completion.**

**Subtheme 3.1: Improvement in positive parenting techniques**

Positive parenting could be defined as the appropriate and timely social contingencies such as approval, reinforcement, and mirroring orchestrated by the parents that lead to child’s willingness to comply with parental instructions resulting in a loving and trusting relationship (Crouter & Hed, 2002; Wahler & Meginnis, 1997). Positive parenting strategies include effective communication skills such as listening, understanding, validating, praising, encouraging, and being a good role model for the children. Positive parenting was measured in terms of how often parents compliment, encourage, and appreciate their kids, and how often they practiced effective communication skills.

The Strengthening Families Program recommends that the best way to change behavior to a new positive behavior is to “Catch Them Being Good” or acknowledge or praise new positive behaviors rather than punishing or criticizing the child. When discussing the lesson on noticing and complimenting good, there were two contradictory themes. Traditional Indian culture believes in practicing humility, reverence for authority, and a readiness to subordinate personal concerns to benefit the family (Farver et al., 2007). According to this culture, praising a child for small reasons can make them egoistic and arrogant. In order to teach humility to the children, parents seldom praise

their kids.

One participant stated, *“I know we don’t praise our kids as much as we should. It’s not in our culture. We have started praising each other now. It makes your day better when you hear compliments from your husband and kids. Now my kids remind me of complimenting them.”*

Another participant mentioned that, *“the lesson on noticing and compliment good in each other was interesting. We don’t praise our kids for all small things. I think if we praise them for all small reasons that will set a pretty low bar and they will stop trying harder. My wife has started praising them; let’s see how that goes...”*

Almost all parents thought that their parenting style lacks praising and complimenting their children. Seven out of 11 parents started praising their kids and their spouses more often after watching the lesson, whereas the remaining 4 parents were reluctant to implement this strategy. Several parents mentioned that their children were more excited about implementing this strategy and insisted practicing it. It is quite possible that as the children of the participants were raised in the U.S., they preferred this recommended American parenting style as compared to the Indian parenting style.

### Subtheme 3.2: Improvement in parental efficacy

Perceived parental efficacy is defined as “beliefs or judgments a parent holds of their capabilities to organize and execute a set of tasks related to parenting a child” (De Montigny & Lacharité, 2005, p. 390). Parental efficacy was measured in terms of how parents rated themselves as being good parents, their satisfaction about their responsibilities, and how well they handled family conflicts and stress.

*“We usually take out our stress and other tensions on our kids. We have started*

*practicing stress management techniques from the DVD and I see that my husband is much relaxed around the kids. I am happy about the way we are handling the family issues now.”*

Stress could occur in a family owing to a combination of problems such as work pressures, financial difficulties, adjusting to the host culture, generation gap, cultural conflicts between parents and kids, and lack of social support. These tensions create stress among immigrant families. It is sometimes natural for family members to vent out the frustration on each other. Effective stress and anger management techniques can help families reduce conflicts, and improve family cooperation and communication (Boss, 2001). Nine out of 11 parents thought that practicing techniques such as negotiation skills, stress and anger management skills, and listening skills were beneficial in improving parental efficacy, family bonding, and decreasing family conflicts.

### Subtheme 3.3: Increased parental supervision

“Parental supervision is a set of correlated parenting behaviors involving attention to and tracking of the child’s whereabouts, activities, and adaptations” (Peterson, Ewigman & Kivlahan, 1993, p. 934). Effective parental monitoring and supervision have been proven to be one of the crucial factors in preventing antisocial and risky health behaviors among adolescents including substance abuse (Kumpfer et al., 2003). Effective parental monitoring includes strategies such as establishing limits and reasonable consequences, effectively confronting negative behaviors, assessing children’s risk for ATOD (alcohol, tobacco, and other drug) use, involving and participating in children’s life, and spending quality time with the family.

Effective parental supervision was measured in terms of how involved the parents

were in their kids' lives, how well they knew their children's lifestyle, and how they dealt when children broke the rules.

Several participants felt that the lesson on monitoring the kid's activities was very helpful to them. Typical Asian parenting style involves higher parental control, physical closeness between family members, and involvement in their children's life (Farver, Xu, Bhadha, Narang, & Lieber, 2007). Sometimes, this parental overprotection and excessive smothering towards their children leads to a child's excessive dependence on parents, family conflicts, lack of personal independence, and lower self-esteem in children. To ensure healthy development of children, parenting should be a combination of independence to make their own choices along with a sense of family responsibilities and self-regulation.

*"Sometimes I smother my kids with love and restrictions. DVD taught us that pampering them is okay to some extent, but we should sometimes trust them and let them make their own decisions."*

Seven out of 11 parents changed their parenting technique from harsh physical punishments to setting rules and reasonable consequences, applying negotiation skills, and positive reinforcement towards their children after completing the chores.

*"I guess spanking is not the only way to handle children issues. I have realized that sometimes reasoning out with them patiently and setting rules and consequences together in a family meeting is less stressful for them and even for me too."*

In traditional Indian culture, physical punishment is a norm. It is not uncommon for the parents to spank their children in order to teach them discipline and setting limits.

*"I sometime spank my kids...just light spanking though. We first try the technique*



*from the DVD. Sometimes it works, but sometimes if they don't listen even after a decent conversation, I don't mind spanking them."*

What immigrant parents consider as duties and responsibility towards family, adolescents view as restrictions and lack of autonomy (Farver et al., 2007). This could result in family conflict. Family conflicts usually occur over daily family life such as doing house chores, sibling rivalry, academic performance, and disagreement between parents and teenagers regarding mingling into the American mainstream culture, dating at a younger age, excessive grooming, and importance given to physical appearance and career choices.

All of the parents (11 out of 11) admitted that this lesson helped them establish family rules and set up a list of consequences to match the mistakes and 7 of them reported reduction in family conflict and increased family communication after practicing this skill.

#### Subtheme 3.4: Improved family communication

Effective communication among family members is proven to be one of the most significant characteristics of strong and healthy families. Family communication refers to the way verbal and nonverbal information is exchanged between family members (Epstein, Bishop, Ryan, Miller, & Keitner, 1993). The lesson on communication skills seemed to be very engaging for all the participants. This lesson taught LUV (listening, understanding, and validating) listening and I-messages in order to improve communication between the family members.

For example, 1 participant stated, *"The DVD taught us the right way to communicate. We knew it was lacking in our family, but didn't know the correct way to*

*communicate.”*

Typically in traditional Indian culture, communication between parents and children is not free and open as compared to the Caucasian families due to their values like personal humility, reverence to elders, and lack of autonomy. This sometimes builds a communication gap between the parents and the children. Five out of 11 parents reported increase in family conflicts initially after practicing “I-messages.” The only logical explanation for this phenomenon is that a sudden increase in open communication can create tension among family members, as they are not used to such conversations. The remaining 6 parents reported a decrease in family conflict and improvement in communication among family members.

According to several parents, the lesson on problem solving and negotiation skills was effective in improving communication between the family members.

*“In our culture saying ‘no’ to others can be a rude thing. I am glad my kids could learn it from the DVD. I know peer pressure is a big deal here and kids should be able to handle such problems by their own.”*

Seven parents reported a decrease in family contention by practicing effective problem solving and negotiation skills to their children. Eight out of 11 parents reported that their kids could relate to the situations shown in the DVD.

Most of the parents (9 out of 11) reported that their kids were keener about working on the win-win negotiation sheet than the parents. As one of the major tenets of traditional Indian culture is reverence for authority, the children are expected to fulfill the wishes of elders and follow their orders. This sometimes does not give much room for adolescents to make their own decisions. The win-win negotiation shown in the DVD

teaches families to listen to both the sides (parents and children) and come to a fair solution, so all the family members get to express themselves. The Asian Indian adolescent could have viewed it as respect to their autonomy and freedom to express their opinions. Overall, the parents reported that their children liked the DVD and the skills more than the parents did.

#### Subtheme 3.5: Increase in family strengths and resilience

In Cannon, (2008, p. 262), Walsh defined family resilience as “the capacity to rebound from adversity strengthened and more resourceful and is an active process of openly facing life’s crises with a sense of endurance and growth”

In this study, family resilience was measured in terms of how often the family members communicated practicing LUV (listening, understanding and validating) listening and I-messages; family supportiveness and love towards each other; family unity; how members organized their chores and duties, how often they spent quality time, and their emotional health.

One of the participants mentioned, *“I think we are able to manage our kids more easily without them or us being cranky and upset. We are much more relaxed and at peace as a family, but you should also ask my kids about this.”*

Ten out of 11 parents reported an overall improvement in the family environment and mental health of their family members.

#### Subtheme 3.6: Decrease in depression among adolescents and children

Depression among adolescents and children is usually difficult to detect and it is often undiagnosed and untreated because the symptoms are overlooked as normal emotional and psychological changes that occur during growth. Many children and

adolescents show mood fluctuations, irritability, sadness, isolation, lack of motivation, and violence or angry behavior. Depression among the children of first-generation immigrant parents is quite common due to the vast cultural gaps, stress of adjusting to the new culture, and different acculturation levels between the parents and children leading to frequent family conflicts.

Depression in children was measured in terms of changes in mood and behavior among the children noticed by the parents before and after the program. Six out of 11 parents noticed decrease in irritability and anger among their children.

#### Subtheme 3.7: Increase in prosocial behaviors among adolescents and children

Prosocial behavior among children and adolescents was measured in terms of how often the parents noticed their children socializing and playing with others, were friendly, empathetic, and helpful towards other.

Six out of 11 parents reported improvement in prosocial skills among their children.

#### Subtheme 3.8: Decrease in parental alcohol usage

There has been abundant research documented suggesting the impact of parenting practices such as parental drinking behaviors, parent-child relationships, communication, and parental monitoring and supervision on reducing the risk of early adolescent alcohol consumption (Arria et al., 2008; Beck, Boyle, & Boekeloo, 2004; Nash, McQueen, & Bray, 2005).

The alcohol and drug usage among parents were measured in terms of their frequency of drinking alcohol or consuming other drugs such as tobacco, prescription and over the counter drugs, and other illicit drugs, in general, and around their families. None

of the parents reported consuming illicit drugs and tobacco; however, 9 out of 11 parents reported drinking alcohol frequently (two to three times per week), around their families. All 9 parents were social drinkers and reported one to two drinks of alcohol each time, but none of them reported to be addicted to alcohol or any other drug. Seven out of the nine parents reported that they are more mindful while drinking alcohol around their children after watching the DVD.

The interview revealed that most of the Indian parents were either reluctant or in a dilemma about their view or opinion regarding talking to their children about alcohol and other drugs, sex, and dating. None of the parents interviewed had initiated this talk with their kids. According to them, the appropriate age for these talks and sharing the SFP DVD with the children was 12 years or 13 years and above. Most parents (8 out of 11) believed that it was safer for their children to drink at home in front of their parents instead of elsewhere after they have crossed the legal age for drinking (i.e., 21 years of age).

The research on alcohol affecting the developing brain was one of the major driving reasons for the parents to restrict their children from indulging in alcohol until the age of 25 years. For example, one participant reported, *“The research on brain development and alcohol was an eye opener. I didn’t know how drinking at young age could be so harmful. I am not going to let my kids touch alcohol unless they are 25 and mature enough.”* Ten out of 11 parents initiated the talk on alcohol and drugs, and also on dating, with their children after watching the DVD.

## Discussion

### Use of Computer Technology-Based Interventions (CBIs) in Prevention Field

Though evidence-based family-based prevention programs have proven to effective in preventing the substance abuse among adolescents (Kumpfer et al., 2003; Loveland-Cherry, 2000), the cost of training the staff, multiple intervention sites, follow up, and numerous implementation costs hinder the dissemination capability of these programs, thus reducing its cost-benefit ratio (Gordon, 2000; Miller & Hendrie, 2008). In addition, barriers such as transportation and trouble with accessibility, busy family schedules, and time constrains, inability to commit to multiple sessions, stigma associated with a parent education approach, and reluctance or shyness to participate in group parenting interventions are likely to reduce the program retention and engagement.

The Computer Technology-Based Interventions (CBIs) such as the SFP 7-17 Years DVD Program have a potential to overcome the above-mentioned barriers and further increasing the dissemination capacities of the program and increasing the cost-benefit ratio. As the DVD program is self-administered, families can watch the DVD at their own pace and time within the privacy of their homes with minimal intrusion. Implementation of the CBIs in prevention field will not only dramatically reduce the program implementation cost with speedy dissemination properties, but also ensure program fidelity and quality control. The results from this research study are in congruence with the findings of previous research studies, suggesting that the utilization of CBIs will be more beneficial for ethnic families due to the participation convenience, lack of stigma, unwillingness to participate in group interventions, minimal outside

interference, and the ability to review and practice the sessions for a longer period of time (Gordon, 2000; Ito, Kalyanaraman, Ford, Brown, & Miller, 2008; Wingood, 2011).

### Limitations of the Research

As a convenient sampling technique was used to recruit parents in this study, the participants cannot be considered the representative sample of the total population of Asian Indian families living in the U.S. However, they are pretty likely to be representative of AI families who are interested in improving their parenting skills and children's outcome by using a Home-Use DVD, which is the desired population for the DVD. In addition, the sample size was relatively small and limited to a certain type of AI families, implying that the findings of this study may not be generalizable to other subsets of population.

The research study completely relied on the perceptions and reports of Asian Indian parents about adolescent substance abuse and their views about the 7-17 Years SFP DVD Program, without directly interviewing the adolescents or collecting quantitative outcome data from the youth in these participating families. This would be a desirable future study since a study done recently with Chinese families found a significant difference in outcome reported by the youth as compared to their parents (Xie, 2013).

Further research is needed to extend our understanding on the thoughts and views of Asian Indian adolescents about substance abuse, their perception about the risk and protective factors, and the effect of the SFP 7-17 Years DVD on adolescent behaviors. Further directions to research include investigation of the long-term effects of the CBIs among the families by comparing their results with traditional group-based interventions

and by replicating the program by conducting randomized control trials in various setting and among different ethnic populations.

### Conclusion

The qualitative data from this research study suggest that the SFP 7-17 Years DVD Program could have a positive impact on Asian Indian families in improving several parenting, family, and children variables.

The AI parents reported that the children were more enthusiastic about watching the sessions regularly, reviewing the skills, and practiced the assignments as compared to the parents. As the children were raised in the U.S, there are chances that they might be associating themselves with the American parenting style. Watching the DVD initiated more open communication between parents and their children. Though most parents were unwilling to abandon their Asian Indian parenting styles completely, they were willing to make some positive changes in their parenting style by implementing new strategies from the DVD to make their parenting style a proper blend of Indian as well as American parenting styles.

As the ethnic families prefer family interventions as compared to individual interventions (Lawton et al., 2008; Vissandjee et al., 2007), the Computer Technology-Based SFP 7-17 Years Program could be a potential solution for reaching minority populations in a very cost-effective way that in turn could result in increased engagement and retention of the participants. These findings have clear implications for the acceptability and effective use of computer technology such as CDs, DVDs, Computer-Mediated Instructions (CMI), and phone applications to reduce family intervention costs



among ethnic families. Digital media can improve wide-scale delivery of public health messages, education, and behavioral change interventions and health knowledge.

### References

- Arria, A. M., Kuhn, V., Caldeira, K. M., O'Grady, K. E., Vincent, K. B., & Wish, E. D. (2008). High school drinking mediates the relationship between parental monitoring and college drinking: A longitudinal analysis. *Substance Abuse Treatment Prevention Policy*, 3(6), 1-11. doi: 10.1186/1747-597X-3-6.
- Arthur, M. W., Hawkins, J. D., Pollard, J. A., Catalano, R. F., & Baglioni, A. J. (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors: The communities that care youth survey, *Evaluation Review*, 26, 575-601. doi: 10.1177/0193841X0202600601.
- Barbour, R. S. (2001). Checklists for improving rigor in qualitative research: A case of the tail wagging the dog. *British Medical Journal*, 322, 1115-1117.
- Beck, K. H., Boyle, J. R., & Boekeloo, B. O. (2004). Parental monitoring and adolescent drinking: Results of a 12 month follow up. *American Journal of Health Behavior*, 28(4), 272-279.
- Bhattacharya, G. (2002). Drug abuse risks for acculturating immigrant adolescents: Case study of Asian Indians in the United States. *Health & Social Work*, 27(3), 175-183.
- Boss, P. G. (2001). *Family stress management: A contextual approach* (2nd ed). Thousand Oaks, CA: Sage Publications, Inc.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Burkhart, G. (EMCDDA, 2013). *North American drug prevention programmes: Are they feasible in European cultures and contexts?* European Monitoring Center for Drug and Drug Addiction. ISBN/ ISSN: 1725-1767. Retrieved from <http://www.emcdda.europa.eu/publications/thematic-papers/north-american-drug-prevention-programmes>
- Cannon, W. (2008). Strengthening family resilience. *American Journal of Family Therapy*, 36(3), 262-263.
- Centers for Disease Control and Prevention. (2013a). *Asian American populations*. Retrieved from <http://www.cdc.gov/minorityhealth/populations/REMP/asian.html>
- Centers for Disease Control and Prevention. (2013b). *Racial & ethnic minority populations*. Retrieved from <http://www.cdc.gov/minorityhealth/populations/rempe.html>

- Chung, G. H., Flook, L., & Fuligni, A. J. (2009). Daily family conflict and emotional distress among adolescents from Latin American, Asian, and European backgrounds. *Developmental Psychology*, 45(5), 1406-1415.
- Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five traditions* (2nd ed.). Thousand Oaks, CA: Sage.
- Crouter, A. C., & Head, M. R. (2002). Parental monitoring and knowledge of children. *Handbook of Parenting*, 3, 461-483.
- Dasgupta, S. D. (1998). Gender roles and cultural continuity in the Asian Indian immigrant community in the U.S. *Sex Roles*, 38, 953-973.
- De Montigny, F., & Lacharité, C. (2005). Perceived parental efficacy: Concept analysis. *Journal of Advanced Nursing*, 49(4), 387-396. doi:10.1111/j.1365-2648.2004.03302.x
- Farver, J. A. M., Bhadha, B. R., & Narang, S. K. (2002). Acculturation and psychological functioning in Asian Indian adolescents. *Social Development*, 11(1), 11-29.
- Ferrer-Wreder, L., Adamson, L., Kumpfer, K. L., & Eichas, K. (2011). Advancing intervention science through effectiveness research: A global perspective. *Child and Youth Care Forum*, 41(2), 109-117.
- Foxcroft, D. R., Ireland, D., Lister-Sharp, D.J., Lowe, G., & Breen, R. (2003). Longer-term primary prevention for alcohol misuse in young people: A systematic review. *Addiction*, 98, 397-411.
- Foxcroft, D. R., & Tsertsvadze, A. (2012). Universal alcohol misuse prevention programs for children and adolescents: Cochrane systematic. *Perspectives in Public Health*, 132(3), 128-134. doi: 10.1177/1757913912443487.
- Gordon, D. A., (2000). Parent training via CD-ROM: Using technology to disseminate effective prevention practices. *The Journal of Primary Prevention*, 21(2), 227-251.
- Haggerty, K. P., Skinner, M. L., MacKenzie, E. P., & Catalano, R. F. (2007). A randomized trial of Parents Who Care: Effects on key outcomes at 24 month follow up. *Prevention Science*, 8(4), 249-260. doi: 10.1007/s11121-007-0077-2.
- Hawkins, J., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, 112(1), 64-105. doi:10.1037/0033-2909.112.1.64

- Hong, J. S., Huang, H., Sabri, B., & Kim, J. S. (2011). Substance abuse among Asian American youth: An ecological review of the literature. *Children and Youth Services Review*, 33(5), 669-677.
- Ito, K.E., Kalyanaraman, S., Ford, C.A., Brown, J.D., & Miller, W.C. (2008). Let's Talk About Sex: Pilot study of an interactive CD-ROM to prevent HIV/STIS in female adolescents. *AIDS Education and Prevention*, 20, 78-89.
- Kitano, H. H. J., & Chi, I. (1990). Asian Americans and alcohol use: Exploring cultural differences in Los Angeles. *Alcohol, Health and Research World*, 2, 42-47.
- Kreuter, M. W., Lukwago, S. N., Bucholtz, D. C., Clark, E. M., & Sanders-Thompson, V. (2003). Achieving cultural appropriateness in health promotion programs: Targeted and tailored approaches. *Health Education & Behavior*, 30(2), 133-146.
- Kumpfer, K. L. (2013). Family-based interventions for the prevention of substance abuse and other impulse control disorders in girls. Invited Spotlight Article, *ISRN Addiction*, Hindawi Publishing.
- Kumpfer, K. L., & Alvarado, R. (2003). Family-strengthening approaches for the prevention of youth problem behaviors. *American Psychologist*, 58(6-7), 457-465. doi: 10.1037/0003-066x.58.6-7.457.
- Kumpfer, K. L., Alvarado, R., Smith, P., & Bellamy, N. (2002). Cultural sensitivity and adaptation in family based prevention interventions. *Prevention Science*, 3(3), 241-246.
- Kumpfer, K.L., Alvarado, R., Tait, C., & Whiteside, H.O. (2007). The Strengthening Families Program (SFP): An evidence-based, multi-cultural family skills training program. In P.Tolan, J. Szapocznik, & S. Sambrano (Eds.), *Preventing youth substance abuse: Science based programs for children and adolescents* (pp. 159-182). Washington, D.C: American Psychological Association.
- Kumpfer, K. L., Alvarado, R., & Whiteside, H. O. (2003). Family based interventions for substance use and misuse prevention. *Substance Use Misuse*, 38, 1759-1787.
- Kumpfer, K. L., & DeMarsh, J. P. (1985). Family environmental and genetic influences on children's future chemical dependency. *Journal of Children in Contemporary Society: Advances in Theory and Applied Research*, 18(1-2), 49-91.
- Kumpfer, K. L., Magalhães, C., & Xie, J. (2011). Cultural adaptations of evidence-based family interventions to strengthen families and improve children's developmental outcomes. *European Journal of Developmental Psychology*, 9(1), 104-116.
- Kuramoto, F. H. (1994). Drug abuse prevention research concerns in Asian and Pacific Islander populations. *NIDA research monograph*, 139, 249-272.

- Lawton, J., Ahmad, N., Hanna, L., Douglas, M., & Hallowell, N. (2006). I can't do any serious exercise: Barriers to physical activity amongst people of Pakistani and Indian origin with type 2 Diabetes. *Health Education Research*, 21, 43-54.
- Loveland-Cherry, C. J. (2000). Family interventions to prevent substance abuse: Children and adolescents. *Annual Review of Nursing Research*, 18(1), 195-218.
- Miller, T., & Hendrie, D. (2008). *Substance abuse prevention dollars and cents: A cost-benefit analysis*, DHHS Pub. No. (SMA) 07-4298. Rockville, MD: Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration.
- Nash, S. G., McQueen, A., & Bray, J., H. (2005). Pathways to adolescent alcohol use: Family environment, peer influence, and parental expectations. *Journal of Adolescent Health*, 37(1), 19-28.
- Nation, M., Kumpfer, K.L., Crusto, C.A., Wandersman, A., Seybolt, D. Morrissey-Kane, E., & Davino, K. (2003). What works in prevention: Principles of effective prevention programs? *American Psychologist*, 58(6/7), 449-456. [PMID: 12971191].
- National Institute on Drug Abuse. (1998). *Drug use among racial/ethnic minorities*. NIH Publication No. 98-3888. Retrieved from <http://www.ssc.wisc.edu/~oliver/RACIAL/Reports/NIHMinoritydrugUse%20report.pdf>
- Olson, D. H., Russell, C. S., & Sprenkle, D. H. (1983). Circumplex model of marital and family systems: VI. Theoretical update. *Family Process*, 22(1), 69-83.
- Peterson, L., Ewigman, B., & Kivlahan, C. (1993). Judgments regarding appropriate child supervision to prevent injury: The role of environmental risk and child age. *Child Development*, 64(3), 934-950.
- Pew Research Center. (2011). *U.S. Population projections: 2005–2050*. Retrieved from <http://www.pewhispanic.org/files/reports/85.pdf>
- Poulsen, S. S. (2009). East Indian families raising ABCD adolescents: Cultural and generational challenges. *The Family Journal: Counseling and Therapy for Couples and Families*, 17(2), 168-174. doi: 10.1177/1066480709332715
- Rodnium, J. (2007). *Causes of delinquency: The social ecology model for Thai youth*. (Doctoral dissertation). University of Utah, Salt Lake City, Utah.

- Schinke, S. P., Fang, L., & Cole, K. C. (2011). Preventing substance abuse among Black and Hispanic adolescent girls: Results from a computer-delivered, mother-daughter intervention approach. *Substance Use Misuse*, 46(1), 35-45.
- Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (2011). *The NSDUH Report: Substance use among Asian adolescents*. Rockville, MD. Retrieved from [http://www.samhsa.gov/data/2k11/WEB\\_SR\\_006/WEB\\_SR\\_006.htm](http://www.samhsa.gov/data/2k11/WEB_SR_006/WEB_SR_006.htm)
- Thai, N. D., Connell, C. M., & Tebes, J., K. (2010). Substance use among Asian American adolescents: Influence of race, ethnicity, and acculturation in the context of key risk and protective factors. *Asian American Journal of Psychology*, 1(4), 261-274.
- Tobler, N., & Kumpfer, K. L. (2000). *Meta-analysis of effectiveness of family-focused substance abuse prevention programs*. Report submitted to the Center for Substance Abuse Prevention, Rockville, MD.
- UNODC (2009). *Guide to implementing family skills training programmes for drug abuse prevention*. United Nations Office on Drugs and Crime-Vienna, UN, New York. Retrieved from <http://www.unodc.org/documents/prevention/family-guidelines-e.pdf>
- United States Census Bureau. (2011). *Overview of race and Hispanic origin: 2010*. 2010 Census Briefs, C2010BR-02. Washington, DC: U.S. Government printing office. Retrieved from <http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf>
- United States Census Bureau. (2012). *U.S. census bureau projections show a slower growing, older, more diverse nation a half century from now*. Retrieved from <https://www.census.gov/newsroom/releases/archives/population/cb12-243.html>
- United States Census Bureau. (2013). *Asians fastest-growing race or ethnic group in 2012*. Census bureau reports. Retrieved from <http://www.census.gov/newsroom/releases/archives/population/cb13-112.html>
- Vissandjee, B., Thurston, W., Apale, A., & Nahar, K. (2007). Women's health at the intersection of gender and the experience of international migration. In M. Morrow, O. Hankivsky, & C. Varcoe (Eds.), *Women's health in Canada: Critical perspectives on theory and policy* (pp. 221-243). Toronto: University of Toronto Press.
- Wahler, R. G., & Meginnis, K. L. (1997). Strengthening child compliance through positive parenting practices: What works? *Journal of clinical child Psychology*, 26(4), 433-440.

- Wingood, G. M., Card, J. J., Er, D., Solomon, J., Braxton, N., Lang, d., Seth, P., Cartreine, J., & DiClemente, R. J. (2011). Preliminary efficacy of a computer-based HIV intervention for African-American women. *Psychology and Health*, 26(2), 223-234.
- Xie, J. (2013). *Effectiveness evaluation of a culturally adapted family skills training program for Chinese American adolescents and their families*. (Doctoral dissertation). University of Utah, Salt Lake City, Utah.

## CHAPTER 4

# COMPARATIVE EFFECTIVENESS OF A NEW HOME-USE CBI SFP 7-17 YEARS DVD AND ITS NEW FAMILY GROUP VERSION TO THE EXISTING EVIDENCE-BASED STRENGTHENING FAMILIES PROGRAM



### Abstract

The purpose of this research was to compare the effectiveness of the two new digital DVD video versions, namely the new Home-Use 11-session CBI SFP 7-17 Years DVD version and the DVD enhanced family group version of the Strengthening Families Program (SFP) to SFP norms. Additional analyses included examining the impact of the newly developed CBI SFP 7-17 Years DVD Program on girls and boys enrolled in the program. The study also examined the impact of the CBI SFP 7-17 Years DVD Program among Asian Indian and non-Asian Indian families residing in Utah on the 21 standardized SFP outcomes.

The research design employed a quasi-experimental 3-group nonequivalent comparison group design that included two repeated measures (pre- and posttest). A total of 155 families were recruited voluntarily to participate in one of the two SFP DVD conditions and were compared to 1,537 age-matched (10-16 years old) high-risk families derived from the SFP normative database. Twenty-one outcomes, including clinical measures for 18 parent, family, and child outcomes and three cluster outcomes, were measured using the standardized SFP retrospective pre- and posttest questionnaire. The 2 x 3 repeated measures within and between groups ANOVA along with post hoc analysis was conducted.

The traditional 14-session SFP group had statistically significant results for all 21 measured outcomes. The Home-Use CBI SFP 7-17 Year DVD Program showed statistically significant results for all outcomes except two (criminality and hyperactivity) and the DVD enhanced family group for 20 out of 21 outcomes except criminality. Gender analysis revealed that the program was equally effective for girls as for boys.

The comparison between AI and NAI families suggest that the CBI SFP 7-17 Years DVD Program was effective among both groups; however, the effect sizes were two to five times larger for the Asian Indian families as compared to the non-Asian Indian families.

These positive results suggest that by employing more widely computer technology-based interventions, such as the SFP 7-17 Years DVD Program, more families including ethnic families can be accessed in EBP family interventions at dramatically lower costs.

### Introduction

The advent of the 21<sup>st</sup> century marked the successful utilization of science and technology for the betterment of mankind. During this era, the use of computer technology to obtain health-related information, manage and prevent diseases, or to deliver behavioral change interventions by changing knowledge, attitudes, and behaviors has been a norm (Budman, 2000; Moore, 2011). In spite of the promising results, the computer technology-based interventions (CBI) are still to attain their full potential due to their underutilization and dearth in research studies. According to Noar, Black, and Pierce, (2009) “computer technology-based interventions (CBIs) can be defined as those interventions that use computer technology as the primary or sole medium for intervention delivery” (p. 525).

Because of the promise of CBIs in reducing implementation costs dramatically and thus allowing more families to participate in evidence-based programs (EBPs), Mothers Against Drunk Driving (MADD-Utah) and Dr. Karol Kumpfer, developer of Strengthening Families Program (SFP), created the new Home-Use Computer Technology-Based 11-session SFP 7-17 Years DVD Program. The traditional 7- and 14-

session SFP family skills training group interventions have been proven in comparative effectiveness reviews (NIDA, 2006; UNODC, 2009), meta-analyses (Broening et al., 2012; Foxcroft et al., 2003, 2012), and cost-benefit studies (Miller & Hendrie, 2008), to be one of the most effective substance abuse prevention programs.

Dr. Karol Kumpfer developed the Strengthening Families Program (SFP) in 1982 on a National Institute on Drug Abuse (NIDA) grant as the first parenting and family skills training program for addicted parents in treatment. Over 12 randomized control trials and field studies, with more than half by independent research teams, have found SFP to be very effective in reducing risk for substance abuse in at-risk youth by strengthening family protective factors. One of the most prestigious meta-analysis reviews by the Oxford University Cochrane Collaboration Reviews in Medicine and Public Health found SFP 10-14 Years Program to be twice as effective in reducing alcohol and drug use as any other family or youth-only prevention program delivered in schools (Foxcroft et al., 2003, 2012).

However, cost-benefit analysis studies done by Miller and Hendrie (2008) showed SFP to not be as cost-beneficial at \$11 saved per dollar spent as the best youth-only school substance abuse prevention programs, which have \$20 to \$33 cost/benefit ratios. Though SFP is one of the most efficient evidence-based family interventions, its implementation is relatively expensive. The traditional 14-session SFP version requires four trained facilitators or group leaders and a site coordinator or clinical supervisor, intervention sites, and involves multiple sessions, making it a time-consuming and laborious procedure. Fidelity to the SFP model also requires additional costs for nightly meals, transportation, and attendance incentives, home practice gifts, a graduation party

with gifts, and outcome and process evaluation. The cost of implementing SFP ranges from about \$880 for the 7-session version for general low-risk families to \$1400 per family for the 14-session version for higher risk families. This makes the program implementation expensive, and also tough to replicate the program with fidelity and quality control at various settings.

The main purpose of this study was to compare and evaluate the comparative effectiveness of the three different delivery methods of the evidence-based Strengthening Families Program (SFP) namely; the traditional 14-session SFP, DVD enhanced SFP family group (DVD + group) version, and the Computer Technology-Based Intervention (CBI) 11-sessions Home-Use SFP 7-17 Years DVD version. The secondary aim of this study was to investigate the impact of the newly developed CBI SFP 7-17 Years DVD Program on girls and boys enrolled in the program. The tertiary aim of this study was to examine and compare the impact of the CBI SFP 7-17 Years DVD Program on Asian Indian (AI) and non-Asian Indian (NAI) families residing in Utah on the 21 standardized SFP outcomes.

#### Problems with Recruiting Participant's in Intervention Studies

Several studies in the healthcare field have documented difficulties concerning recruitment and retention of the participants (Hawranik & Pangman, 2002; Miller, McKeever, & Coyte, 2003; Simpson et al., 2000). Low recruitment and engagement could lead to premature study termination, decreased statistical power and negative findings, increase in probability of type 2 error, inadequate generalizability, reduced participant and researcher confidence, and decreased probability of getting statistically significant outcomes needed for publication, and policy implementation (Muth et al.,

2001, Wilcox et al., 2001). Recent research has shown that retention of the participants in the program is the single best predictor of effective outcomes (Simpson, 2001) and higher levels of participant engagement are directly proportional to the greater program retention rate (Broome, Joe, & Simpson, 2001).

Using the new CBI Strengthening Families Program (SFP) in the form of DVD, families could watch, practice, and review sessions at their own pace and at their own convenience, which in turn could result in increased retention and engagement among the participants in a very cost-effective way. Prior research done by Haggerty et al. (2006 & 2007) reported that self-paced delivery can result in increased retention and engagement among high-risk subjects who cannot attend group sessions because of multiple jobs and family demands.

With the utilization of computer-based technology in the prevention field, the implementation cost of interventions can be reduced dramatically. With fewer funds available for prevention today, more cost-efficient methods of delivering EBPs such as SFP are needed. Hence, over the past 5 years, Mothers Against Drunk Driving (MADD-Utah) and Lutra Group partnered to create a new 11-session CBI SFP 7-17 Years DVD Program (10-sessions and Introduction) that greatly reduced the cost of SFP implementation per family from \$1400 to \$5 per family or just the cost for making and mailing the DVDs. Of course, if a school or agency also uses family coaches to call or email the families each week to help them progress through, the cost of the Home-Use DVD increases slightly.

### Causes of Substance Abuse

Though there has been abundant research investigating trends and patterns of substance abuse as well as risk factors and protective factors, the exact etiological causes of substance abuse still remains unclear. Previous research studies have concluded that there is a complex interaction between genetic, biological, and environmental factors leading to substance abuse and misuse (Tarter, 2002). Epigenetic research done on rats by (Caldji et al., 1998) suggested that maternal care such as frequency of licking/grooming and arched-back nursing during infancy facilitate behavioral coping responses to stress in the progeny by mutating the development of neurons that mediate fearfulness and anxiety. Other studies done by Champagne and Meaney (2007), and Champagne (2010) postulated that deficiency in the nurturing behavior of parents can result in increased stress reactions in the offspring's leading to diminished exploratory behaviors, cognitive development, and oxytocin binding in future generations.

In one of the first epigenetic human studies, Brody and his research team has demonstrated, using SFP, that increasing parental nurturing can have dramatic impact on cortisol levels (decrease in cortisol levels), which in turn decreases the likelihood of acquiring genetically transmitted diseases, such as substance abuse. Several randomized control trials were conducted among African American school students for 10 years in order to test the effectiveness of a culturally tailored version of SFP 10-14 Years, called the Safe African American Families (SAAF) Program. Dr. Brody and associates performed saliva tests among the participants after 5 years of SFP completion and reported that 50% of the participants, who had the risky genes present in them, showed less 30-day alcohol or drug use, decrease in depression/anxiety, delinquency, and sexual

intercourse rates. These genetically high risk individuals had one or two short alleles for the 5-HTTLPR serotonin transporter gene and/ or the 7-repeat dopamine gene (Brody et al., 2009 a & b, 2010, 2012, 2013).

### Computer Technology-Based Strengthening Families Program

#### (SFP) DVD Program

The new 11-session Computer Technology-Based Intervention (CBI) Strengthening Families Program (SFP) (10-session + Introduction) is based on the evidence-based 14-session SFP 12-16 Years Program. To shorten the program, the first group class “getting to know you and learning classroom rules” and the last session on “graduation and what have we learned” were removed with the self-paced Home-Use CBI SFP 7-17 Years DVD version. Also, two lessons on Positive Discipline and Consequences were combined into one lesson. See Table 4.1 for the CBI 11-session SFP curriculum. Detailed supporting handouts, weekly lesson summary posters, behavior tracking sheets, and homework assignments can be printed from the DVD to augment each lesson’s video content. Viewing families are invited to pause the DVD and role-play each skill during the classroom sessions and a “Role-play now” reminder sign flashes on a black screen. Role-play slips featuring different scenarios are provided with each lesson’s handouts. With the use of the DVD, the program implementation does not require group leaders to facilitate the groups, which in turn drastically reduces the implementation cost, making the program more cost-effective. In addition, the use of a DVD format serves to maintain intervention fidelity through the standardization of content and mode of delivery.

Table 4.1: CBI SFP 7-17 Years DVD Program – Contents of Sessions

Family			Parent		Youth	
Session	Topic	Details	Topic	Details	Topic	Details
<b>Intro</b>	Healthy family-healthy brain	Ages 10-21 critical brain development	Parents key to prevention	One-on- one daily play time with child	Each is of value, dreams possible	Teen choices affect brain development
<b>2</b>	Notice & praise the good daily	Praise increases good behavior	How to praise effectively	Stress-reducers & fun family dinners	Noticing the good feels good	Compliment good in family members
<b>3</b>	Communication & family meetings	Active listening & I messages skills	Validate kids feelings	Banish negative communication	Be assertive vs. aggressive	Talking politely gets you more in life
<b>4</b>	5 “R’s” increase family success	Rules, rewards, responsibilities, routines, rituals	Rules routines add stability, reward jar	Use social, other reinforcers; one word reminders	Benefits of “5 R’s” responsibilities increase skills	Routines simplify life; happy rituals increase bonding
<b>5</b>	Set limits & consequences	Extra chore jar consequences	Teach prosocial skills	Punishments not effective as praise	Learn “following instructions” skill	Learn to accept “no” graciously



Table 4.1 continued

	<b>Family</b>		<b>Parent</b>		<b>Youth</b>	
<b>Session</b>	Topic	Details	Topic	Details	Topic	Details
<b>6</b>	Problem solving/ negotiation skills	5 easy steps to problem solving	Problem solving steps	Win- Win negotiation	Problem solve to avoid trouble	Negotiating chores & rewards
<b>7</b>	Goals/ contracts -change behavior	Goal setting & tracking behavior	Changing behavior skills	Teach to receive positive criticism	Goals & dreams important	Set SMART goals to achieve dreams
<b>8</b>	Alcohol & drugs damage brain	Brain facts animation	Proven skills to keep kids safe	Bonding, boundaries, monitoring	Steps to avoid peer pressure	“5 C’s” to say “No” and keep friends
<b>9</b>	Choosing good friends/ monitoring	Peers influence drinking behavior	Monitor kids’ activities	Keep alcohol-free social environment	Choose and be a positive friend	Friendship skills/ accept monitoring
<b>10</b>	Family values, traditions, service	Teach & reinforce values, traditions	Good brain health service	teach kids to give back to society	Prosocial behavior = happy	I can be an agent of change

The families can participate in the program in the privacy of their homes at their own pace and time with minimal intrusion. It can be especially beneficial for families who fear to commit, are reluctant to participate in group interventions (Levin et al., 2011), or have little time to participate on a regular basis because of work and family requirements.

With the use of CBI, SFP has a potential to reach a wide range of audiences and can help improve the participant retention and engagement by presenting a self-paced learning environment (Levin et al., 2011). One prior study (Stemler, 1997) suggested that the interactive technology has the capability to appeal to a variety of learning styles and improve their content retention through the use of audio, narration, text, pictures and graphic design, videos, and interactive role playing, by engaging them in active and participatory learning.

#### Purpose of the Research Study

The purpose of the study was to determine the comparative effectiveness of the two new digital DVD video versions, namely the new Home-Use 11-session CBI SFP 7-17 Years DVD Program and the DVD enhanced family group Program to the SFP norms. The SFP norms were age-matched and derived from the SFP database of over 5000 families who had either completed the proven 14-session SFP 6-11 Years or SFP 12-16 Years group Program. The families in the CBI SFP 7-17 Years DVD Program (DVD only) were distributed the SFP DVDs to watch at home, at their own pace and time with no interference, whereas during the DVD enhanced family group Program (DVD + group), the participating families attended group sessions along with other families at schools taught by the group leaders. The DVD enhanced family group followed the same

11-session curriculum from the DVD, but in a group format as compared to the in-home setting for the DVD-only group. Additional analysis included examining the impact of the CBI SFP 7-17 Years DVD Program on girls and boys enrolled in the program. The study also examined the impact of the CBI SFP 7-17 Years DVD Program among Asian Indian and non-Asian Indian families residing in Utah on the 21 standardized SFP outcomes.

### Research Questions and Hypotheses

The following are the research questions and hypotheses for the study.

#### Research Question 1

Is the newly developed 11-session Computer Technology-Based Home-Use DVD and the DVD enhanced family group versions (DVD + group) of the Strengthening Families Program (SFP) 7-17 Years as effective as the traditional 14-session group delivered SFP norms? (Quantitative analysis).

##### Hypothesis 1.1

There will be statistically significant group mean pre- to posttest differences for all three delivery methods of SFP for all but two (e.g., child hyperactivity and criminality) of the 21 standardized outcomes. (19 out of 21 outcomes).

The two nonstatistically significant outcomes are not age appropriate to this middle school age cohort and also have been found to have low reliability in other studies.

##### Hypothesis 1.2

The DVD enhanced family group version will have statistically significant results with the largest pre- to posttest differences for all SFP standardized outcomes (except for

child hyperactivity and criminality) followed by the SFP norms.

### Hypothesis 1.3

The CBI DVD version will have statistically significant results with the smallest pre- to posttest differences than the other two groups.

### Research Question 2 (Gender Outcomes)

How will the newly developed CBI SFP 7-17 years DVD Program effect the girls and boys enrolled in the program? (Quantitative analysis).

### Hypothesis 2

The group mean pre- to posttest differences for girls graduating from the CBI SFP 7-17 Years Program will be statistically significantly larger as compared to the group mean pre- to posttest differences for the boys enrolled in the program.

### Research Question 3

Was the Computer Technology-Based (CBI) Home-Use SFP 7-17 Years DVD Program as effective among Asian Indian families as compared to the non-Asian Indian families? (Quantitative analysis - 2 x 2 repeated measures ANOVA).

### Hypothesis 3

The group mean pre- to posttest differences for Asian Indian families on the standardized SFP instruments will be statistically significantly larger as compared to the group mean pre- to posttest differences for non-Asian Indian families.

## Research Methods

### Research Design

The research design consisted of a quasi-experimental 3-group nonequivalent comparison group design with two repeated measures employing a uniform standardized retrospective pre- and posttest testing battery administer to graduating parents in all three experimental groups. In addition, a proxy pretest design was employed to reduce testing and instrumentation threats to internal validity and reduce positive pretest bias.

### Participants

All participating families were voluntarily recruited from schools and community agencies. Hence, this was a convenience sample of families who wanted to participate in SFP. During the years 2011 to 2013, families were recruited and graduated from one of the three SFP delivery versions, namely CBI SFP 7-17 Years DVD version (DVD only), the DVD enhanced family group version (DVD + group), and the SFP Norms that were derived from the database of over 5,000 families who had participated either in the research-proven 14-session SFP 6-11 Years or SFP 12-16 Years Program.

The DVD enhanced family group version (DVD + group) was composed of 74 families who had graduated and submitted valid pre- and posttest data. They were recruited and enrolled by the students at the Utah Valley University (UVU) under the supervision of Dr. Grant Richards, professor in the Behavioral Science Department. These high-risk families were recommended for inclusion in the SFP DVD enhanced family group version by school counselors and administrators due to truancy, behavioral problems, and lack of academic progress. At the end of the program, the families submitted SFP standardized retrospective pre- and posttest surveys using a paper and pen

format.

The Computer Technology-Based intervention (CBI) Home-Use SFP 7-17 Years version (DVD only) was composed of 81 families who had watched all 11 sessions from the DVD without any other interference, in the privacy of their homes, at their own pace and time, and submitted the online retrospective pre- and posttest outcome surveys by the end of the program.

The traditional 14-session SFP group condition was composed of 1,536 families with children of the same age group between 7 to 17 years, who had participated either in SFP 12-16 or 6-11 Years Program during the same period. These families were extracted from the existing SFP database of over 5,000 families. They were also high-risk families who had been enrolled and graduated from SFP through schools and agencies in the U.S.A.

#### Recruitment of Asian Indian Families

A convenient sampling technique was used to recruit Asian Indian families from Salt Lake City and County, and Utah County. The recruitment of parents was done by flyers distributed to the Asian Indian families near Indian temples and grocery stores. The SFP DVD was marketed to them as a parenting skills training and family intervention, and not specifically as a substance abuse prevention program. The researcher, being of Asian Indian ethnicity, felt that the Asian Indians would be unwilling to watch the DVD if the DVD was marketed to them as a substance abuse prevention program.

A total of 32 copies of SFP 7-17 Years DVDs were distributed to the families. Out of the 32 subjects, 26 subjects also participated in a quantitative retrospective SFP standardized pre- and posttest survey.

### Inclusion Criteria for Asian Indian Families

Inclusion criteria for the participating families were reading or understanding at least 8<sup>th</sup>-grade English. The participants had to be of Asian Indian origins who have immigrated to the U.S. in the last 10 years. Also, they had to have a 6-18-year-old child or children living with them born and brought up in the U.S. They should have had a stated willingness to complete the SFP 7-17 Years DVD family skills training program and have signed the informed consent form. Families had to have access to a computer/ laptop or a TV with a DVD player.

### Exclusion Criteria for Asian Indian Families

Parents who could not read simple 8<sup>th</sup>-grade English were not encouraged to enroll in the program. They would have difficulty benefitting from the program because the written materials in the DVD guidebook and the home practice assignments were in 8<sup>th</sup>-grade English. Another exclusion criterion was the participants who were not of Asian Indian decent that had immigrated to the U.S. for more than 10 years and only had children below 6 years of age or teenagers above 18 years of age. Families not having access to a computer/ laptop or a TV with DVD players were also excluded from the study.

### Recruitment of non-Asian Indian Families

In the year 2011-2012, the Salt Lake City Mayor's Antidrug Coalition paid for DVDs to be duplicated and the Salt Lake City school district superintendent approved mailing the DVDs home to parents of students. The DVD disks were mailed to parents of student's ages 7 to 17 years old in Salt Lake City public schools. The total of 81 families submitted the online SFP questionnaire using survey monkey. For the comparison group,

the non-Asian Indian group was extracted from this CBI SFP DVD database from several schools in Salt Lake City and both groups were also matched for the children age's (7-17 years). A total of 23 non-Asian families matched these criteria, out of which 21 families were Caucasians and 2 families were of Hispanic ethnicity.

### Data Collection Procedures

The SFP DVD enhanced family group participants (DVD + group) submitted the retrospective SFP pre- to posttest using the paper and pencil parent self-reported format at the end of the program, whereas the CBI Home-Use SFP 7-17 Years DVD participants (DVD only) submitted the same tests, but using either a paper/pen survey or the online survey through survey monkey. In the year 2011-2012, the Salt Lake City Mayor's office mailed the Home-Use 11-session SFP DVD to 14,221 families, targeting parents and children between 7 to 17 years of age in the Salt Lake City public schools. There could have been more parents who participated in the SFP Home-Use DVD Project; however, only those parents who completed the surveys were including in this study.

In the year 2013, more recruitment was done by the author using a convenient sampling technique targeting parents of children between 7 to 17 years of age. By the end of Sept 2013, a total of 81 parents had completed watching the DVD and submitting the SFP parent retrospective tests, either using a pen and paper format or submitting it online using survey monkey services. The three groups used the same retrospective SFP parent testing battery though the format of taking the test was different (online or paper format). However, as the scale internal consistencies, an indicator of reliability, can vary by sample, they were calculated for both pre- and posttest in the Asian Indian samples using Cronbach's alpha ( $\alpha$ ) statistic



## Measures: Strengthening Family Program Parent Retro

### Pre/Post Test Questionnaire

The parent questionnaire consisted of 21 standardized scales embedded in the SFP testing battery. All scales were derived from well-known standardized self-report clinical instruments with acceptable reliability and validity values. It included the basic demographic information related to the parent, child, and family, such as age of the participant, age of the identified child, school grades of the identified child, number of family members who participated in the program, sex, marital status, race and ethnicity, language, socioeconomic status, number of sessions attended by the family members and client satisfaction (Kumpfer et al., 2002); Parenting Scale (Kumpfer, 1989); Overall Family Strengths/Resilience (Kumpfer, 1997); Drug and alcohol use (CSAP GRPA); Parent Observations of Child's Activities for mental and behavioral changes (POCA-R, Kellam); Parental Depression Scale (CES-D, Radloff, 1977); Community that Care Youth Survey (CTC, Arthur et al., 2002); Childhood Behavior Checklist (CBCL, Achenbach, 1988); and Behavior Assessment System for Children (BASC, Reynolds & Kamphaus, 2004). See Table 4.2 for the SFP Hypothesized Outcomes and Measuring instruments. It lists the objectives of the SFP outcome variables and names of the scales used to measure them.

All of the scales used in the standardized tests described below have been found to have reasonable internal consistence, except child criminality and hyperactivity that have been found in some samples to not be reliable (Kumpfer, Xie, & O' Driscoll, 2012). Because scale internal consistencies, an indicator of reliability, can vary by sample, they were calculated for both pre- and posttest in these samples using Cronbach's alpha ( $\alpha$ ) internal consistency statistic in SPSS v. 22 for Windows 8.

Table 4.2: SFP Hypothesized Variables and the Measuring Instruments

SFP Outcome Variables	Measures
<i>Parent Immediate Change Objectives</i>	
1. increase positive parenting 2. increase in parenting skills 3. increase parental supervision 4. increase parental efficacy 5. increase in parental involvement 6. decrease in parental substance use or misuse	1. SFP parenting skills 2. SFP parenting skills 3. SFP parenting skills 4. Alabama Parenting Scale 5. Alabama Parenting Scale 6. CSAP30-day use rates
<i>Child Change Objectives</i>	
1. increase social skills (cooperation, assertion, responsibility, and self-control) 2. reduced externalizing 3. reduced covert aggression 4. reduced concentration problems (ADD) 5. reduced criminal behavior 6. reduced hyperactivity (HD) 7. reduced depression	1. Social Skills Rating Scale (parent and child) 2. POCA Child Rating Scale 3. POCA covert aggression scale 4. POCA ADD scale 5. POCA criminal behavior scale 6. POCA hyperactivity scale 7. POCA depression scale
<i>Family Change Objectives</i>	
1. increase positive parent/child relationship or family cohesion 2. reduce family conflict 3. increase family organization and order 4. increase family communication skills 5. increased overall family strengths and resilience	1. Moos FES cohesion 2. Moos FES family conflict 3. Moos FES family organization 4. Moos FES communication 5. Kumpfer & Dunst Family Strengths and Resilience scale

#### Parent Measures

The parenting scale consisted of 40 questions with subscales measuring positive parenting, parent involvement, SFP parenting skills, family organization, family cohesion, family communication, parent supervision, parenting efficacy, family conflict, and parent and child alcohol and drug use (Kumpfer, 1984). Parenting efficacy and skills were measured using the 8-item Hawkins' CTC scales and the 10-item Kumpfer

Parenting Skills scale. Alcohol and illicit drug use (substance use rates, expectation to use, and attitudes about use) were measured using CSAP/GPRA drug use measures, which were originally used in the Monitoring the Future Surveys and National Household Surveys (Johnston, Bachman, & O'Malley, 1997). Parental depression was measured using the widely used 20-item CES-D (Radloff, 1977) depression inventory with high reliability and validity. All of these scales were found in other studies to have acceptable Cronbach's alpha internal consistency (Kumpfer, Xie, & O' Driscoll, 2012).

### Family Environment Measures

The family change outcomes were measured using the modified subscales (four to six items each) of Moos Family Environment Scale (FES, Moos & Trickett, 1974) along with the Children's Version of the Family Environment Scale (Pino, Simons, & Slawinoski, 1983) that includes scales for the level of family conflict, communication, organization, and family cohesion. The family strength and resilience was assessed using a brief 12-item Family Strengths and Resilience created by Karol Kumpfer and Carl Dunst to initially measure child abuse and neglect cases (Kumpfer & Dunst, 1995).

### Child Measures

The risk and protective factor antecedents of negative child behaviors including child overt and covert aggression, concentration problems, hyperactivity, criminal activity, and depression were measured using the 44 questions on these scales from the Kellam Parent Observation of Children's Activities (POCA). These measures are the modified versions of Achenbach and Edelbrock's (1988) Child Behavior Checklist (CBCL). The POCA/TOCA has a five-point scale and is more sensitive to change than the CBCL. Children's problem solving and social and life skills were measured by

selected items from the CDC Youth Risk Behavior Survey used for California's Healthy Kid Initiative and from Gresham and Elliot's (1990) Social Skills Scale.

### Statistical Analyses

In order to compare the effectiveness of the different delivery methods of SFP, two delivery methods, namely the CBI SFP 7-17 Years DVD version and the DVD enhanced family group version (DVD + group) were compared to the archived traditional 14-sessions SFP norms for age-matched 7-17 year olds that were derived from the database of over 5,000 families who had participated either in the research-proven 14-session SFP 6-11 Years or SFP 12-16 Years Program.

The statistical analyses were done using SPSS v. 22 for Windows 8 by the primary author of this publication with the help of the SFP statistical consultant for data interpretation. The data included the de-identified parent retrospective pre- and posttests submitted by the participants either using an online survey or a paper survey. Statistical significance was set at  $p < .05$ . Because scale internal consistencies, an indicator of reliability, can vary by sample, they were calculated for both pre- and posttest in these samples using Cronbach's alpha ( $\alpha$ ) statistic.

### Cronbach Alpha Internal Consistency Scores

The Cronbach alpha reliability scores of all the scales for the three delivery methods of SFP were calculated as shown in Table 4.3.

Owing to the robust nature of ANOVA to consider unequal sample sizes, the data analyses included descriptive statistics such as frequency, means, percentage, and inferential statistics, including ANOVA and effect size comparisons of the three experimental groups.

Table 4.3: The Cronbach Alpha ( $\alpha$ ) Internal Consistency Estimates of the 21 Standardized SFP Outcomes

Variables name	Cronbach's alpha ( $\alpha$ ) reliability values	
	Pretest	Posttest
Parental involvement	0.77	0.69
Parental supervision	0.67	0.61
Parental efficacy	0.69	0.62
Positive parenting	0.77	0.72
SFP parenting skills	0.53	0.52
Family cohesion	0.69	0.67
Family communication	0.72	0.64
Family cohesion	0.72	0.53
Family conflict	0.87	0.82
Family organization	0.77	0.73
Family strength/ resilience	0.92	0.89
Child concentration	0.86	0.85
Child covert aggression	0.70	0.65
Child criminal behavior	0.38	0.39
Child depression	0.58	0.51
Child hyperactivity	0.21	0.25
Child overt aggression	0.84	0.81
Child social behavior	0.78	0.77
Parental ATOD use	0.64	0.69

A 3 x 2 repeated measures analysis of variance (ANOVA) with post hoc analyses was employed for each of the 18 outcome scales (five parenting outcomes, five family outcomes, and eight children outcomes) and three cluster outcome scales along with pre- and posttest means, standard deviations, change scores,  $F$  scores,  $p$ -values both within and between groups, and Cohen's  $d$  and partial eta square effect sizes.

In order to conduct the gender analysis, to determine if the program differed in its outcomes between boys and girls enrolled in the CBI SFP 7-17 Years Program, a 2 X 2 within and between groups ANOVA was conducted by creating separate groups of girls and boys for that particular experimental condition, i.e., the CBI SFP 7-17 Years

Program. Then, the two gender groups were compared for their repeated measures (pre- and posttests) using a 2 groups by 2 repeated measures within and between groups ANOVA. We hypothesized that the girls enrolled in the program would have statistically significant results on all 19 out of 21 SFP outcomes or the same amount as compared to boys in the program. On two of the outcomes for Hyperactivity and Criminality, statistical significance is rarely achieved because of low internal consistency found in this age group (Kumpfer, Xie, & O' Driscoll, 2012). The effect sizes reported in this study were calculated using SPSS software in terms of eta squared and Cohen's *d*.

In order to compare the program effectiveness among Asian Indian (AI) and non-Asian Indian (NAI) families, a 2 X 2 repeated measures ANOVA was performed by creating separate groups of Asian Indian and non-Asian Indian families for that particular experimental condition, i.e., the CBI SFP 7-17 Years Program. Then, the two groups were compared for their repeated measures (pre- and posttests) using a 2 groups by 2 repeated measures ANOVA. The analysis included outcomes from the SFP parent survey on 18 individual outcomes (five parenting outcomes, five family outcomes, and eight children outcomes), and three cluster outcome scales with pre- and posttest means, standard deviations, change scores, *F* scores, *p*-values, along with Cohen's *d* and partial eta square effect sizes. The data interpretation was undertaken by the author. (Refer to Table 4.7 for the comparison of 21 outcomes of the SFP 7-17 Years DVD Program among Asian Indian (AI) and non-Asian Indian (NAI) families.)

## Results

The results section included the statistical analyses for the parent, family, child, and parental substance abuse outcomes compared for each of the three different delivery

versions of the SFP: SFP 7-17 Years norms, DVD enhanced family group version (DVD + group), and the CBI SFP 7-17 Years DVD version (DVD only).

### Pre- to Posttest Outcomes Results

The 3 x 2 repeated measures ANOVA revealed that there were statistically significant positive results ( $p < .05$ ) for 21 of the 21 outcomes (100%) for the 14-session SFP 7-17 Year group norms, 20 out of 21 outcomes (95%) for the DVD enhanced family group version (DVD + group), and the CBI DVD version (except for children criminality). However, the effect sizes or amount of pre- to posttest positive changes were largest for the DVD enhanced family group version (DVD + group) as compared to the CBI SFP 7-17 Years DVD version (DVD only) and the SFP norms. The pre- to posttest changes in parenting, family, and children variables and their effect sizes according to the SFP delivery method are discussed below, in detail.

### Pre- to Posttest Parenting Changes by SFP Delivery Version

The Table 4.4 shows the average mean change scores along with the sample size, pre- and posttest means, standard deviations,  $f$  values,  $p$  values, and two types of effect sizes (Cohen's  $d$  and partial eta square) across all five parenting variable (parental involvement, parental supervision, parenting efficacy, positive parenting, SFP parenting skills) for the three delivery methods of SFP.

The DVD enhanced family group version showed the largest mean improvement across the five parenting variables (parent cluster) with the average mean change of  $m = .87$  ( $m = 3.26$  pretest to  $m = 4.13$  posttest score) with an effect size of  $d = .75$ , followed by the CBI SFP 7-17 Years DVD version with the average mean change of  $.67$  ( $m = 3.52$  pretest to  $m = 4.19$  posttest score, ES,  $d = .68$ ), and then the SFP 7-17 Year norms with

Table 4.4: The Comparison of SFP 21 Outcomes Among SFP National Norms, DVD Enhanced Family Group Program, and CBI SFP DVD Program

Scale Name	Sample	Change	<i>F</i>	Sig	ES <i>d</i>	ES <i>d'</i>
Parental Involvement						
SFP norms	1476	0.90	1889.82	0.00	0.56	2.26
DVD group	71	0.97	124.35	0.00	0.64	2.67
CBI DVD	81	0.62	109.68	0.00	0.57	2.30
Parental Supervision						
SFP norms	1511	1.05	2674.67	0.00	0.63	2.61
DVD Group	71	1.02	186.62	0.00	0.72	3.21
CBI DVD	81	0.86	100.64	0.00	0.55	2.21
Parenting Efficacy						
SFP norms	1522	1.00	2258.90	0.00	0.59	2.40
DVD Group	72	0.89	128.33	0.00	0.64	2.67
CBI DVD	81	0.66	132.18	0.00	0.62	2.55
Positive Parenting						
SFP norms	1536	0.91	2194.52	0.00	0.58	2.35
DVD Group	74	1.02	150.93	0.00	0.67	2.85
CBI DVD	81	0.71	141.31	0.00	0.63	2.61
SFP Parenting Skills						
SFP norms	1443	0.62	1556.42	0.00	0.51	2.04
DVD Group	71	0.56	135.22	0.00	0.65	2.73
CBI DVD	81	0.50	90.48	0.00	0.53	2.21
Parent Cluster Scale						
SFP norms	1399	0.90	2954.79	0.00	0.67	2.85
DVD Group	68	0.87	201.67	0.00	0.75	3.46
CBI DVD	81	0.67	172.28	0.00	0.68	2.92
Family Cohesion						
SFP norms	1536	0.91	1666.35	0.00	0.52	2.08
DVD Group	72	1.00	117.51	0.00	0.62	2.55
CBI DVD	81	0.64	93.53	0.00	0.53	2.21
Family Communication						
SFP norms	1496	1.08	3326.28	0.00	0.69	2.98
DVD Group	73	1.00	225.72	0.00	0.75	3.46
CBI DVD	81	1.55	115.01	0.00	0.69	2.98
Family Conflict						
SFP norms	1498	(0.50)	501.01	0.00	0.25	1.15
DVD Group	74	(0.53)	45.54	0.00	0.38	1.57
CBI DVD	81	(0.34)	31.73	0.00	0.28	1.25
Family Organization						
SFP norms	1527	1.29	3295.98	0.00	0.68	2.92



Table 4.4 continued

<b>Scale Name</b>	<b>Sample</b>	<b>Change</b>	<b>F</b>	<b>Sig</b>	<b>ES <i>d</i></b>	<b>ES <i>d'</i></b>
DVD Group	72	1.26	234.97	0.00	0.76	3.56
CBI DVD	81	1.23	203.60	0.00	0.71	3.13
Family Str/ Resi						
SFP norms	1494	1.04	3212.46	0.00	0.68	2.92
DVD Group	71	0.96	241.44	0.00	0.77	3.66
CBI DVD	81	0.97	251.24	0.00	0.75	3.46
Family Cluster Scale						
SFP norms	1419	0.76	3179.20	0.00	0.69	2.98
DVD Group	70	0.75	258.04	0.00	0.78	3.77
CBI DVD	81	0.63	279.47	0.00	0.77	3.66
Concentration						
SFP norms	1375	0.59	1623.25	0.00	0.54	2.17
DVD Group	70	0.59	176.04	0.00	0.71	3.13
CBI DVD	81	0.31	43.34	0.00	0.35	1.47
Covert Aggression						
SFP norms	1455	(0.31)	410.86	0.00	0.22	1.06
DVD Group	71	(0.33)	48.48	0.00	0.40	1.63
CBI DVD	81	(0.22)	26.28	0.00	0.24	1.12
Criminal Behavior						
SFP norms	1487	(0.06)	29.33	0.00	0.01	0.20
DVD Group	72	(0.01)	0.11	0.74	0.00	0.09
CBI DVD	81	(0.01)	0.05	0.81	0.01	0.20
Child Depression						
SFP norms	1457	(0.42)	627.28	0.00	0.30	1.31
DVD Group	72	(0.45)	54.50	0.00	0.43	1.74
CBI DVD	81	(0.39)	77.37	0.00	0.49	1.96
Hyperactivity						
SFP norms	1477	0.11	55.91	0.00	0.03	0.35
DVD Group	73	0.22	18.43	0.00	0.20	1.00
CBI DVD	81	0.09	4.26	0.04	0.05	0.46
Child Overt Aggression						
SFP norms	1442	(0.43)	800.61	0.00	0.35	1.47
DVD Group	71	(0.45)	104.06	0.00	0.59	2.40
CBI DVD	81	(0.31)	28.60	0.00	0.26	1.19
Social Behavior						
SFP norms	1438	0.31	784.05	0.00	0.35	1.47
DVD Group	71	0.33	76.85	0.00	0.52	2.08
CBI DVD	81	0.14	12.03	0.00	0.13	0.77
Child Cluster Scale						
SFP norms	1276	0.09	144.96	0.00	0.10	0.67
DVD Group	65	0.12	1.13	0.00	0.43	1.74

Table 4.4 continued

<b>Scale Name</b>	<b>Sample</b>	<b>Change</b>	<b><i>F</i></b>	<b>Sig</b>	<b>ES <i>d</i></b>	<b>ES <i>d'</i></b>
CBI DVD	81	0.06	16.39	0.00	0.17	0.91
Parental ATOD						
SFP norms	1438	(0.06)	57.37	0.00	0.03	0.35
DVD Group	73	(0.06)	4.03	0.04	0.05	0.46
CBI DVD	81	(0.06)	5.00	0.02	0.05	0.46

the average mean change of .90 ( $m = 3.27$  pretest to  $m = 4.17$  posttest score, ES,  $d = .67$ ). The effect sizes ranged from a high Cohen's  $d = .75$  for the SFP DVD enhanced family group version to the lowest effect size of  $d = .51$  for the CBI SFP DVD version.

The largest effect sizes were seen for the DVD enhanced family group version for improvements in Parental Supervision ( $d = .72$ ), positive parenting ( $d = .67$ ), and SFP parenting skills ( $d = .65$ ). The smallest improvements were for CBI SFP DVD version for SFP parenting skills ( $d = .51$ ). It can be inferred from the results that for the parent variables, the DVD enhanced family group version was the most effective delivery method followed by the CBI SFP DVD version.

#### Pre- to Posttest Family Changes by SFP Delivery Version

The SFP DVD enhanced family group version had the most outstanding results across all of the five (100%) family outcomes, as shown in the Table 4.4. The effect sizes for the family cluster score ranged from a high Cohen's  $d = .78$  for the SFP DVD enhanced family group version to the lowest effect size of  $d = .69$  for the SFP 7-17 Year norms. For all five family outcome scales, the SFP DVD enhanced family group version showed the largest improvement, including increase in Family Cohesion ( $d = .62$ ), Family Communication ( $d = .75$ ), Family Organization ( $d = .76$ ), and Family Strengths and Resilience ( $d = .77$ ), with a decrease in Family Conflict ( $d = .38$ ).

The next largest improvements were seen in the CBI SFP version, including increase in Family Cohesion ( $d = .53$ ) vs. ( $d = .52$ ) for SFP norms, Family Communication ( $d = .69$ ) for both CBI SFP and the SFP norms, Family Organization ( $d = .71$ ) vs. ( $d = .68$ ) for SFP norms and Family Strengths and Resilience ( $d = .75$ ) vs. ( $d = .68$ ) for SFP norms, with a decrease in Family Conflict ( $d = .28$ ) vs. ( $d = .25$ ) for

SFP norms. It can be inferred from the results that for the family variables, the DVD family group version was the most effective delivery method followed by the CBI SFP DVD version.

Pre- to Posttest Child and Teen Behavioral and Emotional Changes by  
SFP Delivery Version

The SFP DVD enhanced family group version showed significant results for all six children variables except for criminal behavior ( $p > 0.05$ ) with the largest Cohen's  $d$  for five out of seven children variables, namely Children's concentration ( $d = .71$ ) vs. ( $d = .54$ ) for SFP norms vs. ( $d = .35$ ) for the CBI SFP version, Covert Aggression ( $d = .40$ ) vs. ( $d = .24$ ) for the CBI SFP version vs. ( $d = .22$ ) for SFP norms, Overt Aggression ( $d = .59$ ) vs. ( $d = .35$ ) for SFP norms vs. ( $d = .26$ ) for the CBI SFP version, Hyperactivity ( $d = .20$ ) vs. ( $d = .05$ ) for the CBI SFP version vs. ( $d = .03$ ) for SFP norms and for children's social behavior ( $d = .52$ ) vs. ( $d = .35$ ) for SFP norms vs. ( $d = .13$ ) for the CBI SFP DVD version (see Table 4.4).

The SFP 7-17 Year norms showed significant results for all seven children variables, namely concentration, covert aggression, criminal behavior, depression, hyperactivity, overt aggression, and social behavior variables; however, their effect sizes were smaller than the SFP DVD enhanced family group.

The CBI SFP DVD version also showed significant results for six out of seven children variables (except for criminal behavior) with smaller effect sizes than the DVD enhanced family group version. The CBI SFP DVD version showed larger effect sizes for Covert aggression ( $d = .24$ ) vs. ( $d = .22$ ) for SFP norms and Hyperactivity of ( $d = .05$ ) vs. ( $d = .03$ ) for SFP norms. However, the CBI SFP version showed the largest

improvement for children depression with the effect size of ( $d = .49$ ) vs. ( $d = .43$ ) for the DVD enhanced family group version and ( $d = .30$ ) for SFP norms. It can be inferred from the results that for the children variables, the DVD enhanced family group version was the most effective delivery method followed by the CBI SFP DVD version.

The parents' alcohol and drug use variable for the three delivery methods was statistically significant at  $p < .05$ ; however, the effect sizes were relatively smaller, with SFP norms ( $d = .03$ ) vs. ( $d = .05$ ) for both the CBI SFP version and the enhanced family group version (see Table 4.4).

#### Effectiveness of the CBI Home-Use SFP DVD Version

The Home-use Computer Technology-Based Intervention SFP 7-17 Year DVD version showed significant results for five out of five (100%) parenting variables with medium ES ranging from  $d = .63$  for positive parenting skills to  $d = .53$  for SFP parenting skills. It also showed significant results for five out of five family variables with the small to medium ES ranging from  $d = .28$  for family conflicts to  $d = .75$  for family strengths and resilience. In regard to children variables, the CBI SFP DVD version showed significant results for six out of seven outcomes (except for criminal behavior) with small to medium effect sizes ranging from  $d = .13$  for children's social behavior to  $d = .49$  for children depression. In fact, despite having the lowest baseline rate of depression in the children, the CBI SFP 7-17 Years DVD version had the largest pre- to posttest mean improvement, resulting in the highest effect size of  $d = .49$  for reducing child depression as compared to SFP norms ( $d = .30$ ) and the SFP DVD enhanced group version ( $d = .43$ ).

Gender Analysis for the Girls and Boys Enrolled in the CBI SFP 7-17

Years DVD Version

A 2 X 2 within and between groups ANOVA was conducted to assess the impact of gender (boys and girls) on the participant's scores for all the 21 outcomes across the two time periods (pretest and posttest) (see Table 4.5 for gender outcomes).

There was no significant interaction between the gender of the children enrolled in the program and time for 19 out of 21 outcomes, except for family organization (Wilks' Lambda = 0.91,  $F(1,48) = 4.47$ ,  $p = 0.04$ , partial eta squared = 0.08) and SFP parenting skills (Wilks' Lambda = 0.91,  $F(1,48) = 4.48$ ,  $p = 0.03$ , partial eta squared = 0.08). This implies that the changes in SFP parenting skills and family organization depend on whether the participant was a girl or boy enrolled in the program. For the SFP parenting skills variable, the mean difference from pre- to posttest for boys was  $m = .69$  vs.  $m = .36$  for girls. For, family organization variable, the mean difference from pre- to posttest for boys was  $m = 1.67$  vs.  $m = 1.21$  for girls. We cannot explain changes in SFP parenting skills and family organization by stating that they both have larger effects on boys as compared to girls. If there is a significant interaction effect between "time" and "gender," it means that time affects boys and girls differently. Though it is possible that SFP parenting skills and family organization could have larger positive effects on boys as compared to girls, there could be other external factors responsible for this change resulting in the interaction.

There was a substantial main effect for time with both genders, showing significant results for all outcomes except for children criminal behavior (Wilks' Lambda = 0.98,  $F(1,48) = 0.78$ ,  $p = 0.38$ , partial eta squared = 0.01). This suggests that though

Table 4.5: Gender Analyses for Girls and Boys Enrolled in the CBI SFP 7-17 Years DVD Program

Scale Name	Sample	Change	<i>F</i>	sig	ES <i>d</i>	ES <i>d'</i>
Parental Involvement						
Boys	28	0.80	82.00	0.00	0.63	2.61
Girls	22	0.55				
Time gender interaction			3.00	0.09	0.05	
Parental Supervision						
Boys	28	1.35	1.14	0.00	0.70	3.06
Girls	22	1.00				
Time gender interaction			2.62	0.11	0.05	
Parenting Efficacy						
Boys	28	0.75	83.50	0.00	0.63	2.61
Girls	22	0.63				
Time gender interaction			0.73	0.39	0.01	
Positive Parenting						
Boys	28	0.85	89.98	0.00	0.65	2.73
Girls	22	0.68				
Time gender interaction			1.03	0.31	0.02	
SFP Parenting Skills						
Boys	28	0.69	47.58	0.00	0.49	1.96
Girls	22	0.36				
Time gender interaction			4.48	0.03	0.08	
Parent Cluster Scale						
Boys	28	0.89	12.55	0.00	0.20	1.00
Girls	22	0.64				
Time gender interaction			0.60	0.43	0.01	
Family Cohesion						
Boys	28	0.56	51.09	0.00	0.51	2.04
Girls	22	0.52				
Time gender interaction			0.04	0.83	0.00	
Family Communication						
Boys	28	1.77	1.06	0.00	0.69	2.98
Girls	21	1.32				

Table 4.5 continued

<b>Scale Name</b>	<b>Sample</b>	<b>Change</b>	<b><i>F</i></b>	<b>sig</b>	<b>ES <i>d</i></b>	<b>ES <i>d'</i></b>
Time gender interaction			2.32	0.13	0.04	
Family Conflict						
Boys	28	(0.55)	26.03	0.00	0.35	1.47
Girls	22	(0.33)				
Time gender interaction			1.67	0.20	0.03	
Family Organization						
Boys	28	1.67	1.70	0.00	0.78	3.77
Girls	22	1.21				
Time gender interaction			4.470	0.04	0.08	
Family Strengths/Resilience						
Boys	28	1.12	1.65	0.00	0.77	3.66
Girls	22	0.94				
Time gender interaction			1.24	0.27	0.02	
Family Cluster Scale						
Boys	28	0.69	1.94	0.00	0.80	4.00
Girls	22	0.58				
Time gender interaction			1.49	0.22	0.03	
Child Concentration						
Boys	28	0.60	1.01	0.00	0.67	2.85
Girls	22	0.47				
Time gender interaction			1.34	0.25	0.02	
Child Covert Aggression						
Boys	28	(0.46)	72.57	0.00	0.60	2.45
Girls	22	(0.41)				
Time gender interaction			0.99	0.63	0.00	
Child Criminal Behavior						
Boys	28	(0.06)	0.78	0.38	0.01	0.20
Girls	22	0.00				
Time gender interaction			0.78	0.38	0.01	
Child Depression						
Boys	28	(0.54)	49.44	0.00	0.50	2.00



Table 4.5 continued

<b>Scale Name</b>	<b>Sample</b>	<b>Change</b>	<b><i>F</i></b>	<b>sig</b>	<b>ES <i>d</i></b>	<b>ES <i>d'</i></b>
Girls	22	(0.32)				
Time gender interaction			3.40	0.07	0.06	
Boys	28	0.32	17.35	0.00	0.26	1.19
Girls	22	0.14				
Time gender interaction			2.83	0.09	0.05	
Child Overt Aggression						
Boys	28	(0.69)	75.60	0.00	0.61	2.50
Girls	22	(0.44)				
Time gender interaction			3.82	0.05	0.07	
Child Social Behavior						
Boys	28	0.39	76.83	0.00	0.61	2.50
Girls	22	0.25				
Time gender interaction			3.31	0.07	0.06	
Child Cluster Scale						
Boys	28	0.05	1.23	0.00	0.72	3.21
Girls	22	0.08				
Time gender interaction			3.19	0.08	0.06	

the program was effective among the children enrolled in the program with effect sizes ranging from  $d = .26$  for children overt aggression to  $d = .49$  for children depression, there was no significant difference in the effectiveness of the CBI SFP 7-17 Years Program for the girls and boys enrolled in the program or, in other words, the program was equally effective among the children with no specific impact on the outcomes by their gender.

#### Results for Program Effectiveness by Comparing Asian Indian and non-Asian Indian Families

Analyses were performed using SPSS v. 22.0 for Windows 8. Statistical significance was set at  $p < .05$ . Standard data analysis methods included descriptive statistics (i.e., frequency, means, percentage), and a 2 X 2 repeated measures ANOVA for comparing the mean scores between Asian Indian and non-Asian Indian families for the 21 standardized SFP outcomes. The analysis included outcomes from the SFP parent survey on 18 individual outcomes (five parent, five family, and seven children), and 3 cluster outcomes (parent cluster, family cluster, and children cluster) with pre- and posttest means, standard deviations, change scores,  $F$  scores,  $p$ -values, along with Cohen's  $d$  and partial eta square effect sizes. The author undertook the data interpretation. The Cronbach's alpha ( $\alpha$ ) internal consistency estimates, an indicator of scale reliability, were calculated for both pre- and posttest for Asian Indian population as shown in Table 4.6.

The results section of the outcomes is comprised of statistical analyses for the parent, family, child, and parental substance abuse outcomes compared for the Asian Indian (AI) and non-Asian Indian (NAI) families.

Table 4.6: The Cronbach's Alpha ( $\alpha$ ) Internal Consistency Estimates of the SFP 21 Standardized Outcomes (Asian Indian Population)

Variables name	Cronbach's $\alpha$ reliability values	
	Pretest	Posttest
Parental involvement	0.73	0.30
Parental supervision	0.45	0.50
Parental efficacy	0.40	0.46
Positive parenting	0.47	0.50
SFP parenting skills	0.53	0.52
Family cohesion	0.80	0.44
Family communication	0.42	0.48
Family conflict	0.88	0.87
Family organization	0.55	0.77
Family strengths/ Resilience	0.74	0.69
Children concentration	0.53	0.21
Children covert aggression	0.73	0.10
Children criminal behavior	0.45	0.49
Children depression	0.67	0.72
Children hyperactivity	0.34	0.21
Children overt aggression	0.84	0.63
Children social behavior	0.60	0.70
Parental ATOD use	0.43	0.59

Pre- to Posttest Parenting Changes (Asian Indian vs.  
Non-Asian Indian Families)

Table 4.7 discusses the average mean change scores along with the sample size, pre- and posttest means, standard deviations,  $f$  values, and effect sizes across all five parenting variables. The parenting variables were parental involvement, parental supervision, parenting efficacy, positive parenting, SFP parenting skills) for the two groups, Asian Indians (AIs) and non-Asian Indian (NAI) families.

Both groups showed statistically significant outcomes for all the parenting variables (parental cluster); however, the Asian Indian families (AI) showed larger improvement across parenting variables (parent cluster) with the average mean change of

Table 4.7: The Comparison of 21 Outcomes of the SFP 7-17 Years DVD Program Among Asian Indian Families and the non-Asian Indian Families

Scale Name	Sample	Change	<i>F</i>	Sig	ES <i>d</i>	ES <i>d'</i>
Parental Involvement						
Asian Indians	26	0.96	1.88	0.00	0.88	5.42
non-Asian Indians	23	0.42	13.12	0.00	0.37	1.53
Parental Supervision						
Asian Indians	26	1.82	7.64	0.00	0.96	9.80
non-Asian Indians	23	0.52	21.32	0.00	0.49	1.96
Parenting Efficacy						
Asian Indians	26	0.94	1.11	0.00	0.81	4.13
non-Asian Indians	23	0.43	18.36	0.00	0.45	1.81
Positive Parenting						
Asian Indians	26	1.09	1.69	0.00	0.87	5.17
non-Asian Indians	23	0.45	18.67	0.00	0.45	1.81
SFP Parenting Skills						
Asian Indians	26	0.82	1.47	0.00	0.85	4.76
non-Asian Indians	23	0.25	4.18	0.04	0.16	0.87
Parent Cluster Scale						
Asian Indians	26	1.12	5.37	0.00	0.95	8.72
non-Asian Indians	23	0.41	22.29	0.00	0.50	2.00
Family Cohesion						
Asian Indians	26	0.54	29.16	0.00	0.53	2.12
non-Asian Indians	23	0.55	21.48	0.00	0.49	1.96
Family Communication						
Asian Indians	26	2.48	1.09	0.00	0.97	11.37
non-Asian Indians	23	0.57	33.54	0.00	0.60	2.45
Family Conflict						
Asian Indians	26	(0.77)	68.49	0.00	0.73	3.29
non-Asian Indians	23	(0.12)	0.98	0.33	0.04	0.41
Family Organization						
Asian Indians	26	2.07	5.61	0.00	0.95	8.72
non-Asian Indians	23	0.83	52.68	0.00	0.70	3.06
Family Strengths /Resilience						
Asian Indians	26	1.41	4.92	0.00	0.95	8.72
non-Asian Indians	23	0.64	39.33	0.00	0.64	2.67
Family Cluster Scale						
Asian Indians	26	0.82	3.33	0.00	0.93	7.29
non-Asian Indians	23	0.47	47.42	0.00	0.68	2.92
Child Concentration						
Asian Indians	26	0.74	2.01	0.00	0.89	5.69

Table 4.7 continued

<b>Scale Name</b>	<b>Sample</b>	<b>Change</b>	<b><i>F</i></b>	<b>Sig</b>	<b>ES <i>d</i></b>	<b>ES <i>d'</i></b>
non-Asian Indians	23	0.33	21.83	0.00	0.49	1.96
Child Covert Aggression						
Asian Indians	26	(0.63)	1.17	0.00	0.82	4.27
non-Asian Indians	23	(0.23)	15.43	0.00	0.41	1.67
Child Criminal Behavior						
Asian Indians	26	(0.05)	1.00	0.32	0.03	0.35
non-Asian Indians	23	(0.00)	-	-	-	-
Child Depression						
Asian Indians	26	(0.77)	1.62	0.00	0.86	4.96
non-Asian Indians	23	(0.09)	2.63	0.11	0.10	0.67
Child Hyperactivity						
Asian Indians	26	0.40	21.98	0.00	0.46	1.85
non-Asian Indians	23	0.07	1.71	0.20	0.07	0.55
Child Overt Aggression						
Asian Indians	26	(0.89)	1.28	0.00	0.83	4.42
non-Asian Indians	23	(0.25)	27.38	0.00	0.55	2.21
Child Social Behavior						
Asian Indians	26	0.51	2.05	0.00	0.89	5.69
non-Asian Indians	23	0.14	12.94	0.00	0.37	1.53
Child Cluster Scale						
Asian Indians	26	0.02	0.34	0.56	0.01	0.20
non-Asian Indians	23	0.12	34.20	0.00	0.60	2.45
Parent ATOD Use						
Asian Indians	26	0.83	88.31	0.00	0.77	3.66
non-Asian Indians	23	0.95	1.40	0.00	0.86	4.96

1.12 ( $m = 3.18$  pretest to  $m = 4.30$  posttest score) with an effect size (ES) of  $d = .95$  as compared to the non-Asian Indian families (NAI), who had the mean change of .41 ( $m = 3.97$  pretest to  $m = 4.38$  posttest score, ES  $d = .50$ ). The highest improvement was seen for parental supervision with effect size ( $d = .96$ ) for AIs vs. ( $d = .49$ ) for NAIs followed by positive parenting (ES,  $d = .87$ ) for AIs vs. ( $d = 0.45$ ) for NAIs. The SFP parenting skills outcome showed larger improvement for the AI group ( $d = .85$ ) vs. ( $d = .16$ ) for the NAI group. Parental involvement and parental efficacy outcomes showed larger ES for AIs ( $d = .88$ ), ( $d = .81$ ) vs. ( $d = .37$ ), ( $d = .45$ ) for NAIs, respectively. It can be inferred from the results that the CBI SFP 7-17 Years DVD Program was highly effective among both the Asian Indian and non-Asian Indian families; however, the effect sizes for all parental outcomes were two to five times larger for Asian Indian families as compared to the non-Asian Indian families.

Pre- to Posttest Family Outcome Changes (Asian Indian vs.  
non -Asian Indian Families)

The Asian Indian families (AI) showed larger improvement across the five family variables (family cluster) with the average mean change of .82 ( $m = 2.66$  pretest to  $m = 3.48$  posttest score) with an effect size (ES) of  $d = .93$  as compared to the non-Asian Indian families (NAI), who had the mean change of .47 ( $m = 3.29$  pretest to  $m = 3.76$  posttest score, ES  $d = .68$ ).

The highest improvement was seen for family communication with effect size ( $d = .97$ ) for AIs vs. ( $d = .60$ ) for NAIs followed by family organization (ES,  $d = .95$ ) for AIs vs. ( $d = 0.70$ ) for NAIs. The family cohesion and family resilience outcome showed larger improvement for the AI group ( $d = .53$ ), ( $d = .95$ ) vs. ( $d = .49$ ), ( $d = .64$ ),

respectively, for the NAI group. Though the family conflict outcome showed statistically significant positive pre- to posttest changes for the AI group with the effect size,  $d. = .73$ , there was no statistically significant pre- to posttest change for the NAI group ( $p = .33$ ) (refer to Table 4.7). It can be inferred from the results that the CBI SFP DVD Program was effective among Asian Indian families with the effect sizes almost 1.5 to 2 times larger than the non-Asian Indian families.

Pre- to Posttest Children Outcome Changes (Asian Indian vs.  
Non-Asian Indian Families)

The AI group showed significant positive changes for six out of seven children outcomes, including concentration with effect size ( $d. = .95$ ), covert aggression ( $d. = .82$ ), depression ( $d. = .86$ ), hyperactivity ( $d. = .46$ ), overt aggression ( $d. = .83$ ), and social behavior ( $d. = .89$ ). The NAI group showed significant positive changes for four out of seven children outcomes, including concentration with effect size ( $d. = .49$ ), covert aggression ( $d. = .41$ ), overt aggression ( $d. = .55$ ), and social behavior ( $d. = .37$ ) (refer to Table 4.7). It can be inferred from the results that the effect sizes for most children variables (concentration, covert aggression, overt aggression, social behavior) were 1.5 to 2 times larger for the Asian Indian families as compared to the non-Asian Indian families.

Pre- to Posttest Parental Alcohol and Drug Use Outcome Changes  
(Asian Indian vs. non-Asian Indian Families)

Both groups, AI and NAI, showed statistically significant positive outcomes for parental alcohol and drug use; however, the NAI group showed larger effect size ( $d. = .86$ ) with the mean change of .95 ( $m = 1.13$  pretest to  $m = 2.08$  posttest score) as compared to the AI group, who had the mean change of .47 ( $m = 1.33$  pretest to  $m = 2.16$

posttest score, ES  $d. = .77$ ) (refer to Table 4.7). Though the CBI SFP DVD Program was effective among AI and NAI families for controlling parental alcohol and drug use, the effect size were slighter higher for non-Asian Indian families ( $d. = .86$ ) than the Asian Indian families ( $d. = .77$ ).

### Discussion

There were some research design limitations to this study. As the research design used in this study was a 3-group quasi-experimental nonequivalent control group design, participant randomization was not feasible. As all the participants were self-selected, the baselines were expectedly not equivalent. The SFP 7-17 Years normative database included very high-risk families, whereas the DVD enhanced family group version (DVD + group) included high- to medium-risk families referred by the school counselors and administrators due to children showing truancy, behavioral problems, lack of academic progress. The CBI SFP DVD version (DVD only) included local self-motivated families from the same school district, who reported to be at lower risk on the pretest as compared to the SFP 7-17 Years norms and DVD enhanced family group (DVD + group) versions. As seen in any other comparative outcome studies, the risk level differences between the three delivery versions during the pretest might have affected the effect size calculation. However, each sample can be considered a representative of its own population, which implies that all three delivery methods of SFP are equally effective in producing the desired effects.

Owing to the financial and social burden imposed by substance use disorder treatments, it is important for the health practitioners and policy makers to implement EBPs at a large scale with quality and fidelity control (Spoth, Greenberg, Turrisi, 2008).



Though the research on the utilization of computer technology-based intervention (CBI) while implementing family skills interventions seems promising, it is still in its infancy.

Further research is needed to delve into the effectiveness of CBI delivery of evidence-based prevention programs, like SFP, studied by conducting vigorous randomized control trials and comparing the results of CBIs with the group interventions and tailored message interventions. As evident from the results above, the CBI SFP 7-17 Years DVD Program has the potential to broaden the public health impact by reducing ATOD prevalence by strengthening families. If disseminated as a universal prevention program through schools, many more families can be reached for very low cost as compared to the treatment of more traditional youth and family prevention programs. The outcomes of this research suggest that dissemination to low-risk and higher risk families as well as ethnic families through schools can result in significant improvement in important precursors of substance abuse, delinquency, and mental problems in adolescents as well as families.

Though the advantages of computer technology-based programs over the group or individually tailored programs such as cost-effectiveness, wide dissemination capabilities, ease and 24/7 availability, flexibility and convenience, greater confidentiality, standardized delivery method with control of fidelity and quality, as well as dramatically reduced implementation costs are quite evident from recent studies (Budman, 2000; Moore, 2011), its disadvantages cannot be overlooked. The disadvantages include loss of social support for encouragement, appreciation, and reinforcement of positive behavioral changes among the participating families by the group leaders and other participants, difficulties in evaluating the program, and tracking

progress of the participants (Noar, 2011).

However, the home-use or self-paced DVD version can also help mitigate the hostility of high-risk youth during group sessions that sometimes can result in a negative contagion effect, if the group leaders cannot control the youth. This negative effect was first reported by Dishion, Kavanagh, and Kiesner (1996) for their family and youth intervention called the Family Check-Up (FCU) Program.

The results from the study seem encouraging, but were limited by small and unequal sample sizes, and mostly a lack of randomization because of the use of non-comparable comparison groups with each experimental condition composing a different type of sample. Although the robustness of the ANOVA mitigated the effects of unequal sample sizes in each group, the problem with small sample sizes in the two DVD groups turned out to be minor. Because of the large effect sizes, there was more than enough power in the experimental group sample sizes to reach statistically significant results for almost all measured outcomes. Although a standardized testing battery was employed across all three-delivery groups, different data collection methods were used. Some participants submitted the survey at the end of the intervention using a paper/pen format in a group intervention while others submitted the survey online. In addition, only surveys submitted by the parents were analyzed since no youth data were collected. Further research is needed to investigate the effect of the CBI SFP 7-17 Years DVD Program on an adolescent population by administering standardized SFP youth surveys.

One of the aims of the study was to measure the impact of the CBI SFP 7-17 Years Program on girls and boys enrolled in the program. As there has been a dearth of studies that conduct separate gender analysis to assess the impact of the programs on girls

and boys (Kumpfer, Smith, & Summerhays, 2008), it has been difficult to answer the question of whether prevention programs are equally effective for girls and boys or if some programs work better for girls as compared to boys and vice versa. While compiling (United Nations Office on Drugs and Crime) UNODC Guidelines for Effective Drug Prevention Programs for Girls, Kumpfer and Magalhães (2013) found that only 19 substance abuse prevention programs have ever included subgroup analyses to test their impact on girls separately from boys. Of these, 11 were school-based youth-only programs that found no positive results for girls, but of the eight family programs, all but one found positive results for girls and boys. Hence, girls seem to respond better to family-based substance abuse prevention programs. The gender analyses conducted in the study revealed that the CBI SFP 7-17 Years DVD Program was equally effective among girls and boys enrolled in the program. These results support the recent gender analysis outcomes for SFP of the total SFP normative database and also in a sample of Portuguese families in the USA and in Portugal (Kumpfer, 2013; Magalhaes, 2013).

### Conclusion

As the young generation becomes more computer savvy, the use of computer technology-based interventions have greater potential to show positive results among adolescents and preteens. With the Computer Technology-Based Home-Use SFP 7-17 Years DVD Program, the families can watch, review, and practice the sessions at their own pace and time, and at their own convenience, which in turn could result in increased retention and engagement rates among the participants, especially ethnic families. The results also showed the CBI SFP 7-17 Years DVD Program can serve to be a research-grounded and cost-effective program with wide dissemination capabilities across a

variety of the population. Moving EBP family interventions towards computer delivery technologies would thus increase sustainability in the face of prevention funding budget cuts while increasing the impact and reach to more families.

### References

- Achenbach, T.M., & Edelbrock, C. (1988). *Child behavior checklist (CBCL)*. Center for Children, Youth, & Families. Burlington, VT: University of Vermont press.
- Arthur, M. W., Hawkins, J. D., Pollard, J. A., Catalano, R. F., & Baglioni, A. J. (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors: The communities that care youth survey. *Evaluation Review*, 26, 575-601.
- Bachman, J. G., Wadsworth, K. N., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (1997, February 3). National press release: *Drug use in young adulthood: U-M's monitoring the future study identifies causes*. Ann Arbor, MI: University of Michigan News and Information Services.
- Brody, G. H., Beach, S. R. H., Philibert, R. A., Chen, Y. F., Lei, M. K., Murry, V. M., & Brown, A.C. (2009b). Parenting moderates a genetic vulnerability factor in longitudinal increases in youths' substance use. *Journal of Consulting and Clinical Psychology*, 77(1), 1-11.
- Brody, G. H., Beach, S. R. H., Philibert, R. A., Chen, Y. F., & Murry, V. M. (2009a). Prevention effects moderate the association of 5-HTTLPR and youth risk behavior initiation: Gene  $\times$  environment hypotheses tested via a randomized prevention design. *Child Development*, 80(3), 645-661.
- Brody, G. H., Chen, Y. F., Kogan, S. M., Murry, V. M., & Brown, A. C. (2010). Long-term effects of the Strong African American Families program on youths' alcohol use. *Journal of Consulting and Clinical Psychology*, 78(2), 281-285.
- Brody, G. H., Chen, Y. F., Kogan, S. M., Yu, T., Molgaard, V. K., DiClemente, R. J., & Wingood, G. M. (2012). Family centered program to prevent substance use, conduct problems, and depressive symptoms in black adolescents. *Pediatrics*, 129(1), 108-115.
- Broome, K. M., Joe, G. W., & Simpson, D. D. (2001). Engagement models for adolescents in DATOS-A. *Journal of Adolescent Research*, 16(6), 608-623.
- Budman, S. H. (2000). Behavioral health care dot-com and beyond: Computer mediated communications in mental health and substance abuse treatment. *American Psychologist*, 55, 1290-1300.
- Caldji, C., Tannenbaum, B., Sharma, S., Francis, D., Plotsky, P.M., & Meaney, M. J. (1998). Maternal care during infancy regulates the development of neural systems mediating the expression of fearfulness in the rat. *Proceedings of the National Academy of Sciences of the United States of America*, 95(9), 5335-5340.

- Champagne, F.A., (2010). Epigenetic influence of social experiences across the lifespan. *Developmental Psychobiology*, 52(4), 299-311. doi: 10.1002/dev.20436.
- Champagne, F.A., & Meaney, M. J. (2007). Transgenerational effects of social environment on variations in maternal care and behavioral response to novelty. *Behavioral Neuroscience*, 111(6), 1353-1363.
- Dishion, T.J., Kavanagh, K., & Kiesner, J. 1996. Prevention of early adolescent substance use among high-risk youth: A multiple gating approach to parent intervention. Unpublished paper presented at NIDA's Family Intervention Research Symposium, Gaithersburg, MD.
- Foxcroft, D. R., Ireland, D., Lister-Sharp, D.J., Lowe, G., & Breen, R. (2003). Longer-term primary prevention for alcohol misuse in young people: A systematic review. *Addiction*, 98, 397-411.
- Foxcroft, D. R., & Tsertsvadze, A. (2012). Universal alcohol misuse prevention programs for children and adolescents: Cochrane systematic. *Perspectives in Public Health*, 132(3), 128-134. doi: 10.1177/1757913912443487.
- Gresham, F.M., & Elliot, S.N. (1990). *Social skills rating system*. Circle Pines, MN: American Guidance Service.
- Hawranik, P., & Pangman, V. (2002) Recruitment of community dwelling older adults for nursing research: A challenging process. *Canadian Journal of Nursing Research* 33(4), 171-184.
- Johnston, L. D., Bachman, J. G., & O'Malley, P. M. (1997). *Drug use among American teens shows some signs of leveling after a long rise.* , Ann Arbor, MI: University of Michigan News and Information Services.
- Kumpfer, K. L. (1997). What works in the prevention of drug abuse: Individual, school and family approaches. DHHS, Center for Substance Abuse Prevention. Secretary's Youth Substance Abuse Prevention Initiative: Resource Paper, 69-105.
- Kumpfer, K. L. (2013). Family-based interventions for the prevention of substance abuse and other impulse control disorders in girls. Invited Spotlight Article, ISRN *Addiction*, Hindawi Publishing.
- Kumpfer, K. L., Alvarado, R., Smith, P., & Bellamy, N. (2002). Cultural sensitivity and adaptation in family based prevention interventions. *Prevention Science* 3(3), 241-246.
- Kumpfer, K.L., DeMarsh, J.P., & Child, W. (1989). Strengthening Families Program: Children's skills training curriculum manual, parent training manual, children's

- skill training manual, and family skills training manual (Prevention Services to Children of Substance-abusing Parents). Social Research Institute, Graduate School of Social Work, University of Utah.
- Kumpfer, K.L., & Magalhães, C. (2013). UNODC Gender guidelines. Gender analysis on substance abuse prevention among adolescent females and males. United Nations Office of Drugs and Crime, Vienna, Austria.
- Kumpfer, K.L., Smith, P., & Franklin Summerhays, J. (2008). A wake-up call to the prevention field: Are prevention programs for substance use effective for girls? *Substance Use and Misuse*, 43 (8), 978-1001.
- Levin, W., Campbell, D. R., McGovern, K. B., Gau, J. M., Kosty, D. B., Seeley, J. R., & Lewinsohn, P. M. (2011). A computer assisted depression intervention in primary care. *Psychological Medicine*, 41, 1373-1383. doi:10.1017/S0033291710001935.
- Magalhães, C. (2013). Effectiveness of the Strengthening Families Program 6-11 Years among us Portuguese immigrant families and families in Portugal. (Unpublished doctoral dissertation). Instituto Politécnico de Viseu, Viseu, Portugal.
- Miller, T., & Hendrie, D. (2008). Substance abuse prevention dollars and cents: A cost-benefit analysis, DHHS Pub. No. (SMA) 07-4298. Rockville, MD: Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration.
- Miller, K. L., McKeever, P., & Coyte, P. C. (2003). Recruitment issues in healthcare research: The situation in home care. *Health and Social Care in the Community*, 11(2), 111-123.
- Moore, B. A., Fazzino, T., Garnet, B., Cutter, C. J., & Barry, D. T. (2011). Computer-based interventions for drug use disorders: A systematic review. *Journal of Substance Abuse Treatment*, 40(3), 215-223. doi:10.1016/j.jsat.2010.11.002.
- Moos, R., & Trickett, E. (1974). *Classroom Environment Scale Manual*. Palo Alto, CA: Consulting Psychologists Press.
- Muth, K., Yu, E., Alston, B., & Ellenberg, J. H. (2001) The closeout process for a clinical trial terminated early for lagging enrollment and inadequate follow-up. *Controlled Clinical Trials*, 22, 49-55.
- Noar, S. M. (2011). Computer technology based interventions in HIV prevention: State of the evidence and future directions for research. *AIDS Care*, 23(5), 525-533.
- Noar, S. M., Pierce, L., & Black, H. (2009). Can computer mediated interventions change theoretical mediators of safer sex? A meta-analysis. *Human Communication Research*, 36, 261-297. doi: 10.1111/j.1468-2958.2010.01376.x.

- Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1(3), 385-401.
- Reynolds, C. R., & Kamphaus, R. W. (2004). *Behavior assessment system for children* (2nd ed.), (BASC-2). Circle Pines, MN: AGS.
- Simpson, D. D. (2001). Modeling treatment process and outcomes. *Addiction*, 96, 207-211.
- Simpson, N. K., Johnson, C. C., Ogden, S. L., Gamito, E., Trocky, N., McGuire C., . . . Sullivan, D. (2000). Recruitment strategies in the prostate, lung, colorectal and ovarian (PLCO) cancer screening trial: The first six years. *Control Clinical Trials*, 21(6), 356S-378S.
- Spoth, R. L., Greenberg, M., & Turrisi, R. (2008). Preventive interventions addressing underage drinking: State of the evidence and steps towards public health impact. *Pediatrics*, 121,311-336.
- Stemler, L. K. (1997). Educational characteristics of multimedia: A literature review. *Journal of Educational Multimedia and Hypermedia*, 6(34), 339-359.
- Tarter, R. E., (2002). Etiology of adolescent substance abuse: A developmental perspective. *The American Journal on Addictions*, 11, 171-191.
- Wilcox, S., Shumaker, S. A., Bowen, D. J., Naughton, M. J., Rosal, M. C., Ludlam, S. E., Dugan, E., Hunt, J. R., & Stevens S. (2001) Promoting adherence and retention to clinical trials in special populations: A women's health initiative workshop. [Workshop proceedings.] *Controlled Clinical Trials*, 22, 279-289.
- Xie, J. (2013). *Effectiveness evaluation of a culturally adapted family skills training program for Chinese American adolescents and their families*. (Doctoral dissertation). University of Utah, Salt Lake City, Utah.



## CHAPTER 5

## CONCLUSION

### Review of the Findings

Because SFP is one of the most effective EBPS for the prevention of substance abuse and delinquency (Foxcroft et al., 2003; Foxcroft & Tsertsvadze, 2012; Kumpfer & Hansen, 2014), creating a less expensive delivery mechanism that is equally effective is highly desirable. The use of CBIs is a promising way to reduce costs and also involve more families, including ethnic families, in prevention EBPs. Hence, a new SFP video DVD was created and tested for effectiveness.

The main aim of the study was to compare the different computer DVD delivery and dissemination methods of the Strengthening Families Program (SFP) by conducting a mixed method analysis (quantitative and qualitative study) among Asian Indian (AI) and non-Asian Indian (NAI) families residing in Utah. In addition to this, the study also examined the impact of the completion of SFP DVD 7-17 Years Program on girls and boys enrolled in the program.

The findings of this research study are presented in relation to its research questions:

Is the newly developed 11-session Computer Technology-Based Home-Use DVD and the DVD enhanced family group versions (DVD + group) of the *Strengthening Families Program* (SFP) 7-17 Years is as effective as the traditional and already tested in randomized controls trials 14-session SFP 6-11 Years and SFP 12-16 Years group delivered versions? (Quantitative analysis).

To answer this question, a 3 x 2 repeated measures analysis of variance (ANOVA) was performed to compare the mean scores for the 21 SFP standardized outcomes for the three SFP delivery methods. There were statistically significant positive

results ( $p. < .05$ ) for 21 of the 21 outcomes (100%) for the 14-session SFP group norms for 7 to 17 year olds, but only 20 out of 21 outcomes (95%) for the DVD enhanced family group (DVD + group) version and the CBI DVD version (except for children criminality). However, the effect sizes were largest from the DVD enhanced family group version followed by the CBI SFP DVD version and then SFP norms.

#### Effectiveness of the Home-Use SFP 7-17 Year DVD Program

The Home-Use Computer Technology-Based Intervention SFP 7-17 Year DVD Program with a lower risk population also resulted in statistically significant results for all the measured outcomes expect for child criminality. Typically, the child hyperactivity and child criminality outcomes are statistically insignificant in most SFP results, because of the lower alpha reliabilities of these two scales and no age appropriate measures for 7 to 17 year olds (Kumpfer, Xie, & O'Driscoll, 2012). These two measures are included in the standardized SFP partially as a lie scale or for use with 3 to 5 year olds (hyperactivity) and 12 to 16 years olds (criminality). Since the computer program is written to include both, they are included in the data tables, but not hypothesized to change significantly. The outcome table revealed that there were slightly reduced effect sizes for the Home-Use DVD compared to the SFP 7-17 Years DVD enhanced family group (DVD + group). This reduced effectiveness is probably because of the higher baseline or pretest outcomes for this universal school-based sample of motivated parents who completed the SFP Home-Use DVD. However, somewhat surprising is that the CBI SFP 7-17 Years version had the highest effect size of  $d. = .49$  for reducing child depression as compared to SFP norms ( $d. = .30$ ) and SFP DVD enhanced family group (DVD + group) version ( $d. = .43$ ).

Despite the shorter program of 11 sessions and lack of social support from group involvement, still about 70% (15 out of 21) of the Home-Use DVD outcomes effect sizes were larger than the 14-session SFP group effect size means. As compared to the SFP norms, the CBI SFP Program had the smaller effect size outcomes for parental supervision, and five of the seven child outcomes, namely overt aggression, concentration, social skills, hyperactivity and criminality.

These positive outcomes and reasonably large effect sizes were much larger than expected given the smaller dosage of the SFP DVD intervention of only 20-30 minute sessions viewed in the home without professional or clinical supervision and group social support. These results suggest that for those families that cannot commit to attend a family skills training group or class, much of the positive benefit can be realized through this low-cost home-use DVD. Of course, these positive results need to be replicated with other more high-risk selective prevention families and not just a universal low-risk population. These replication studies are currently being conducted using the Home-Use SFP DVD with refugees and immigrants of different ethnic groups, in juvenile courts, and child maltreatment indicated populations.

#### Gender Outcomes for SFP

Because of the lack of evidence-based prevention programs that have conducted subgroup gender analyses to determine if these programs work for girls as well as for boys (Kumpfer, 2013; Kumpfer, Smith, & Summerhayes, 2008), a subgroup gender analysis was conducted on this Utah school-based sample. The research question addressed was:

How will the newly developed SFP 7-17 Years DVD version impact girls and

boys enrolled in the program. In other words, is the SFP equally effective for girls as for boys? (Quantitative analysis).

A 2 X 2 within-subjects and between-groups ANOVA was conducted to assess the impact of gender (boys and girls) on the participants scores for all 21 SFP standardized outcomes across the two time periods (pretest and posttest).

The gender subgroup analysis result suggests that SFP was effective equally for girls as for boys with effect sizes ranging from  $d. = .20$  for parent cluster to  $d. = .80$  for family cluster. Hence, there was no significant difference in the effectiveness of the CBI SFP 7-17 Years Program for the girls and boys enrolled in the program or, in other words, the program was equally effective among the children with no specifically different impact on the outcomes by their genders.

#### Asian Indian Families' Perceptions of SFP DVD

The research question related to the Asian Indian parents' perceptions of the SFP DVD was:

What are the views, thoughts, and perceptions about the newly developed Computer Technology-Based Home-Use SFP 7-17 Years DVD Program amongst Asian Indian parents living in the U.S?

This question was addressed by conducting in-depth interviews (Qualitative analysis - Thematic analysis). It could be concluded from the research study that the Asian Indian parents who watched the SFP 7-17 Years DVD Program reported to have a positive impact on family members by improving parental involvement in their children's lives, parental monitoring, positive parenting, family cohesion, family communication, family organization, family strengths, and reducing family conflicts. Parents also reported

improvement in children concentration and social behavior, and decrease in children depression. The overall alcohol and drug use among the parents showed reduction after the program completion.

Moreover, parents reported that the Asian Indian children, including adolescents, were more enthusiastic about watching the sessions regularly, reviewing the skills, and practiced the assignments as compared to the parents. As the children were raised in the U.S, there are chances that they might be associating themselves with the American parenting style. Watching the DVD initiated more open communication between parents and their children. Though most parents were unwilling to abandon their Indian parenting styles completely, they were willing to make some positive changes in their parenting style by implementing new strategies from the DVD to make their parenting style a proper blend of Indian as well as American parenting styles.

An additional outcome question included comparative program effectiveness amongst Asian Indian and non-Asian Indian families after the SFP DVD Program completion. The research question was as follows:

Do the Asian Indian participants benefit as much from the CBI SFP 7-17 Years DVD Program on the 21 standardized SFP outcomes as compared to the non-Asian Indian participants?

A 2 X 2 repeated measures ANOVA was performed to compare the mean scores of Asian Indian and non-Asian Indian families for the 21 standardized SFP outcomes after CBI SFP 7-17 Years DVD Program completion.

Both groups, Asian Indians (AI) and non-Asian Indians (NAI) showed statistically significant results for five out of five parenting variables (100%); however,

the effect sizes were two to five times larger for the Asian Indian group as compared to the non-Asian Indian families.

The AI families showed statistically significant results for five out of five family variables, (100%) as compared to the NAI families, who showed statistically significant results for four out of five (80%) family variables (except for family conflict,  $p = .33$ ). The effect sizes for AI families were 1.5 to 2 times larger as compared to the NAI families.

The AI families showed significant positive changes for six out of seven children outcomes, including concentration with effect size ( $d = .95$ ), covert aggression ( $d = .82$ ), depression ( $d = .86$ ), hyperactivity ( $d = .46$ ), overt aggression ( $d = .83$ ), and social behavior ( $d = .89$ ). NAI families showed significant positive changes for four out of seven children outcomes, including concentration with effect size ( $d = .49$ ), covert aggression ( $d = .41$ ), overt aggression ( $d = .55$ ), and social behavior ( $d = .37$ ). It can be inferred from the results that the effect sizes for most children variables (concentration, covert aggression, overt aggression, social behavior) were 1.5 to 2 times larger for the Asian Indian families as compared to the non-Asian Indian families.

Both groups, AI and NAI, showed statistically significant positive outcomes for parental alcohol and drug use; however, the NAI group showed larger effect size ( $d = .86$ ) as compared to the AI group, ( $d = .77$ ).

Overall, the AI families showed larger effect sizes as compared to the non-Asian Indian families mainly because the AI families regarded participating in the SFP DVD Program as an innovative and beneficial experience. None of the families had experienced participating in a program such as SFP DVD Program. As this is one of the

most secluded and shy minorities in the U.S., most Asian Indian families are reluctant in participating in group activities in schools because of vast cultural differences and parenting styles, the language barrier, difficulty in interpreting the American accent, or hesitation to communicating freely with American people because of differences in accents. In addition to this, in most AI families, both parents are working, which gives them very little time to participate in group interventions. One of the most interesting findings of the interviews was that the Asian Indian children, including adolescents, were more involved in watching the DVD sessions, completing the assignments, and tracking sheets as compared to the parents. This could be attributed to the fact that Asian Indian children being born and raised in the U.S are more acculturated as compared to their parents and they prefer the American parenting style over the Indian parenting style.

#### Implications of the Study and Suggestions for Future Research

Though evidence-based family-based prevention programs have proven to be effective in preventing substance abuse, and behavioral and emotional problems among adolescents (Kumpfer & Alvarado, 2003; Loveland-Cherry, 2000), the cost of training the staff, multiple intervention sites, longitudinal follow-up evaluations and booster sessions, and massive implementation costs hinder the dissemination capability of these programs, thus reducing the cost-benefit ratios (Gordon, 2000; Miller & Hendrie, 2008). In addition, barriers such as transportation and trouble with accessibility, busy family schedules and time constraints, inability to commit to multiple sessions, stigma associated with a parent education or clinical family therapy approach, reluctance or shyness to participate in group parenting interventions are likely to reduce program retention and engagement. The Computer Technology-Based Interventions (CBIs) such as SFP 7-17



Years DVD Program has the potential to overcome the above-mentioned barriers, further increasing the dissemination capacities of the program by decreasing the cost-benefit ratio.

The results of prior research (Haggerty et al., 2006, 2007) suggest that the utilization of CBIs will be more beneficial for low-income and highly stressed ethnic and immigrant/refugee families due to the participation convenience, lack of stigma and unwillingness to participate in group interventions, minimal outside interference, and the ability to review and practice the sessions for longer period of time (Gordon, 2000; Ito, Kalyanaraman, Ford, Brown, & Miller, 2008; Wingood, 2011).

The Home-Use DVD seems to be very effective as a universal prevention approach for lower risk and higher functioning families, but the use of the DVD within the group sessions dramatically improves the outcomes, particularly for the higher risk youth and families. Both new 11-session versions (Home-Use and Group class) are very useful in school implementations. The cost-benefit ratio of the new Home-Use DVD should be very high, given the low cost. However, more replications are needed with larger samples in RCTs as well as some longitudinal outcomes.

### Research Limitations

The results from this study are encouraging, suggesting more vigorous utilization of computer-based technology in order to reduce prevention cost. However, the outcomes are limited by unequal sample sizes, lack of randomization of the comparison groups, and need for replication with other populations to increase generalization of the results. Although the same standardized testing battery was used across all three delivery groups, some participants submitted the survey at the end of the intervention using a paper/pen

format while others submitted the survey online. Since only the surveys submitted by the parents were used in this study, further research is needed to investigate the effect of CBI SFP 7-17 Years DVD Program on adolescent population.

Further research is needed to delve into the effectiveness of CBI studied by conducting vigorous randomized control trials and comparing the results of CBIs with other group and tailored message interventions. The CBI SFP 7-17 Year DVD Program has the potential to broaden the public health impact by reducing substance abuse prevalence by strengthening the families. Currently, the DVD is being tested in refugee and immigrant populations and youth detention centers. Recently, in a statewide implementation on a federal 5-year grant in Kansas, the regular 14-session SFP 3-5 and 6-11 Years family groups were found to decrease the number of days to family reunification by half from an average of 258 to 125 days (Brook, McDonald & Yan, 2012). Because of these excellent results, the new SFP DVD groups are being tested with child maltreatment families referred by child protection services in Utah and several other states to prevent child maltreatment, thus saving states considerable amounts of money for foster care placements.

Another creative use of the SFP DVD is in private counseling and with home visitors in social work and mental health. One major university psychiatry department is using them for psychiatric resident training. Of course, a number of school districts are also using the DVDs to increase student's grades and to improve their behaviors at school and at home. Hence, the possible uses of the new video version are just being explored and tested. A new MP3 version has been developed this summer with dubbing in Spanish and English. Several computer applications can be created for SFP delivery on smart

phones, and the web. Of course, all of these new delivery methods will have to be evaluated for fidelity and outcome effectiveness, but because the feedback so far has been positive and, the chances of the new DVD delivery mechanisms being successful in prevention of impulse control disorders and substance abuse in adolescent is promising.

### References

- Brook, J., McDonald, T. P., & Yan, Y. (2012). An analysis of the impact of the Strengthening Families Program on family reunification in child welfare. *Children and Youth Services Review*, 34, 691-695.
- Foxcroft, D. R., Ireland, D., Lister-Sharp, D.J., Lowe, G., & Breen, R. (2003). Longer-term primary prevention for alcohol misuse in young people: A systematic review. *Addiction*, 98, 397-411.
- Foxcroft, D. R., & Tsertsvadze, A. (2012). Universal alcohol misuse prevention programs for children and adolescents: Cochrane systematic. *Perspectives in Public Health*, 132(3), 128-134. doi: 10.1177/1757913912443487.
- Gordon, D. A., (2000). Parent training via CD-ROM: Using technology to disseminate effective prevention practices. *The Journal of Primary Prevention*, 21(2), 227-251.
- Haggerty, K. P., MacKenzie, E.P., Skinner, M. L., Harachi, T. W., & Richard F. Catalano. (2006). Participation in “Parents Who Care”: Predicting program initiation and exposure in two different program formats. *The Journal of Primary Prevention*, 27(1), 47-65. doi: 10.1007/s10935-005-0019-3.
- Haggerty, K. P., Skinner, M. L., MacKenzie, E. P., & Catalano, R. F. (2007). A randomized trial of Parents Who Care: Effects on key outcomes at 24-month follow-up. *Prevention Science*, 8(4), 249-260.
- Ito, K.E., Kalyanaraman, S., Ford, C.A., Brown, J.D., & Miller, W.C. (2008). “Let’s Talk About Sex”: Pilot study of an interactive CD-ROM to prevent HIV/STIS in female adolescents. *AIDS Education and Prevention*, 20, 78-89.
- Kumpfer, K. L. (2013). Family-based interventions for the prevention of substance abuse and other impulse control disorders in girls. Invited Spotlight Article, *ISRN Addiction*, Hindawi Publishing.
- Kumpfer, K. L., & Alvarado, R. (2003). Family-strengthening approaches for the prevention of youth problem behaviors. Principles of effective prevention programs. *American Psychologist*, 58 (6/7), 457-465. [PMID: 12971192].
- Kumpfer, K. L., Alvarado, R., & Whiteside, H. O. (2003). Family-based interventions for substance use and misuse prevention. *Substance Use Misuse*, 38, 1759-1787.
- Kumpfer, K.L., Alvarado, R., Whiteside, H.O., & Tait, C. (2005). The Strengthening Families Program (SFP): An evidence-based, multi-cultural family skills training program. In J. Szapocznik, P. Tolan, & S. Sambrano (Eds.), *Preventing substance abuse* (pp. 3-14). Washington, D.C: American Psychological Association.

- Kumpfer, K. L., & Hansen, W. (2014). Family-based prevention programs. Ch. 8 in L. Scheier & W. Hansen (Eds.), *Parenting and teen drug use*. Cary, NC: Oxford University Press.
- Kumpfer, K. L., & Magalhães, C. (2013). *Gender guidelines for substance abuse prevention program in girls: Do prevention programs work for girls*. UNODC, Vienna.
- Kumpfer, K.L., Smith, P., & Summerhays, J. F. (2008). A wake-up call to the prevention field: Are prevention programs for substance use effective for girls? *Substance Use and Misuse*, 43(8), 978-1001.
- Kumpfer, K. L., Xie, J., & O'Driscoll, R. (2012). Effectiveness of a culturally adapted Strengthening Families Program 12-16 Years for high risk Irish families. *Child and Youth Care Forum*, 41(2), 173-195.
- Loveland-Cherry, C. J. (2000). Family interventions to prevent substance abuse: Children and adolescents. *Annual Review of Nursing Research*, 18(1), 195-218.
- Miller, T., & Hendrie, D. (2008). Substance abuse prevention dollars and cents: A cost-benefit analysis, DHHS Pub. No. (SMA) 07-4298. Rockville, MD: Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration.
- Wingood, G. M., Card, J. J., Er, D., Solomon, J., Braxton, N., Lang, D., Seth, P., Cartreine, J., & DiClemente, R. J. (2011). Preliminary efficacy of a computer-based HIV intervention for African-American women. *Psychology and Health*, 26(2), 223-234